Geological communication in the nineteenth century: the Ellen S. Woodward autograph collection at McGill University

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Introduction

Historians no longer explain science's past by recounting its 'kings and queens and battles' (Price, 1955: 12). They are beginning to rewrite history 'from below' by viewing scientific activity from the bottom up[1]. Turning away from the best known figures and their discoveries, historians of science have started to describe the less well known or even 'unknown' upon whose efforts the enterprise depended (Shapin & Thackray, 1974: 12–13). Irrespective of country or period, most of these social histories have been cast in the mould of institutional studies. The rolls and proceedings of scientific societies, as well as the faculties and funding of the educational institutions, have been mined. Somewhat less frequently social historians have explored the emergence and development of disciplinary groups.

In the multidisciplinary or protodisciplinary area of natural history, scientific syntheses such as those of Charles Darwin or Charles Lyell rested upon the observations of legions of field workers whose contributions should be recognized. The subsidiary role of theory and experiment in natural history, along with the importance of extra-scientific elements like fashion and aesthetics, also calls for a broadened historiographical approach (Allen, 1976*a*). D. E. Allen has even contrasted traditional history of science with the development of natural history where 'so radically different a canvas calls for radically different artist's tools' (Allen, 1976*b*: 509–10). Considered here is one source that permits the sketching of some of the broad outlines of the social history of natural history during the nineteenth century.

Description of the collection

The Ellen Sophia Woodward autograph collection, located in McGill University's Blacker-Wood Library of Zoology and Ornithology at Montreal, provides a rare glimpse into the interests and intrigues of the Victorian naturalists' world. The twelve volumes of letters, autographs and photographs of around four hundred natural historians span nearly a century beginning in the 1820s. Since most letters in the collection were addressed to Ellen's husband Henry

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The 'geologising' Woodwards.
Above, left to right:
Henry; father Sam; brother Samuel P.
Below, left to right:
Sons Henry Page and Martin F.

Woodward (1832–1921), editor of the *Geological Magazine* from 1864 to 1918 and Keeper of the Department of Geology at the British Museum (Natural History) from 1880 to 1901, they illustrate with clarity the concerns of late Victorian geologists. Because Ellen Woodward also included letters written to other members of the Museum's staff—Edward Charlesworth, Charles Koenig, Richard Owen, and George Waterhouse—as well as some received by Henry's geologically-inclined father and brother Samuel, the collection mirrors an even broader segment of nineteenth-century science. Numerous letters sent by naturalists in the colonies, on the continent, and in North America make the Woodward volumes a valuable indicator of international scientific exchange.

Volume nine of the Woodward collection is devoted exclusively to Sir Richard Owen, first superintendent of the natural history departments at the British Museum. It brings together a number of his letters from the 1880s, as well as some printed biographical material. Volume eleven emphasizes letters written by the extended Woodward family, many of whom were practising geologists. The contents of volumes ten and twelve will be neither described nor listed here, as they contain, respectively, letters sent to Adolph von Koenen, geologist at Goettingen University,

Left, Richard Owen; *right*, Sheen Lodge.

and Stanley Boyd, a London physician. Ellen Woodward probably acquired their letters while seeking autographs of scientists, but these two volumes contribute little to the picture of British-based natural history that emerges from the other ten volumes containing Woodward correspondence.

As in any large manuscript repository, the significance of single items varies a great deal. A number of letters concern dinner invitations, appointments and social engagements. Other correspondents, however, addressed important scientific issues of the day, for instance, expressing dissatisfaction with current systems of taxonomy[2]. Perhaps most interesting are certain themes that appear repeatedly throughout the thousands of letters in the collection, which can help to reconstruct some of the characteristics of nineteenth-century geology. Several recurring motifs involve the dissemination of scientific knowledge, particularly the British Museum's role in transmitting information and the dynamics of natural history publishing. Other topics relate to the structure of the Victorian geological community, which was reflected in the distribution of power and revealed during times of controversy and contention. Still other subjects include the importance of metropolitan societies in promoting and shaping scientific activity, and the dominating influence of the Geological Survey over disciplinary evolution. These are just some of the themes suggested by the Woodward collection which can serve as guides to the exploration of the social dimensions of nineteenth-century geology.

The British Museum as disseminator and receiver of scientific information

A considerable amount of correspondence in the Woodward collection pertains to the British Museum, and its off-spring the British Museum (Natural History), whether concerning interdepartmental business, naturalists' visits to view specimens, or requests for materials from the libraries. These letters portray the Museum Keeper as an authority on all aspects of natural history. Koenig and Woodward were constantly asked to send casts and photographs of British Museum acquisitions, if not to loan the objects themselves, to less fortunate institutions and individuals. The British Museum assisted provincial museums at Brighton and Liverpool, as well as those overseas, such as Harvard's Museum of Comparative Zoology[3]. Naturalists in Britain sought the curator's advice in classifying anomalous fossils[4]. Continental geologists often needed

Left, John Rae: Arctic explorer; *right*, William Willoughby Cole, Third Earl of Enniskillen.

detailed descriptions of British species that they had never seen[5]. Correspondents also asked the Keeper about practical matters, for example, how best to preserve specimens and where to procure labels for cabinet displays and dredges for unearthing shells[6].

At the same time that the British Museum transmitted data drawn from its extensive resources and skilled staff, it attracted natural history materials and descriptions from all over the world. By the late nineteenth century, Woodward and his fellow curators had transformed 'the old curiosity-shop in Great Russell Street' into one of the world's finest collections (Rudler, 1888: 268). Stringent rules regulating government-financed expeditions coupled with individual good will had expanded and improved the national repository. Scientifically-inclined military men like Colonel H. W. Feilden sent echinoderms from Malta, supplementing fossil and rock specimens gathered during his expedition to the Arctic[7]. Walter Rothschild, who created his own museum at Tring, agreed to finance an expedition under Forsyth Major which donated its treasures to the Museum[8]. Other wealthy amateur naturalists presented collections accumulated over a lifetime, as did Sir Philip Egerton and Viscount Cole, the third Earl of Enniskillen, with their complementary series of fossil fishes. Several correspondents reporting from the continent kept the staff abreast of the state of European exhibits[9].

Because its Keepers welcomed all kinds of contributions from remote regions, the British Museum has been criticised for its attitude of 'passive receptivity'. In harsher terms Frederick McCoy, director of the National Museum of Victoria, condemned the 'ostrich like gluttony' of the mother institution (Moyal, 1976: 60, 121). Certainly curators like Woodward encouraged the traffic in objects for the British Museum, especially when geological and palaeontological specimens were relatively easy to obtain and ship. William Swainson's *Naturalist's Guide* explained that shells required 'less trouble and risk procuring and preserving' than any other class of zoological subjects (Swainson, 1822: 43). The *Manual of Scientific Enquiry* told the eager amateur whose trip to foreign lands provided the impetus for beginning geological investigations that he needed little preparatory study or apparatus. Fragments of rock were not always appreciated but 'every single fossil species, bones, shells, crustacea, corals, impressions of leaves, petrified wood, etc.' would be welcomed (Herschel, 1886: 273–76, 280).

Father-and-son palaeontologists: *left*, Robert Etheridge Sr; *right*, Robert Etheridge Jr.

To emphasize only the acquisitiveness of the British Museum, however, distorts the reciprocity of exchange between metropolis and province. The same process that enlarged the Museum's collections introduced civil servants and military men living abroad to scientific pursuits, thereby expanding indigenous learned communities. Indeed, the opportunity to act as Museum emissary at the outpost of empire was not wholly unattractive to ambitious young practitioners. Naturalists like Woodward and his assistant keeper Robert Etheridge sent their own sons to begin scientific apprenticeships in the hinterland. Just as natural history objects gravitated towards the Museum, expertise and example diffused outward.

Among the natural history sciences, perhaps geology stood to gain the most from continuous barter of materials and ideas. The discipline had grown dramatically between 1790 and 1830, as the transmission of information became 'speedy, assured and fruitful'. By mid-century the transformation of local studies into regional stratigraphy had advanced remarkably the knowledge of secondary and tertiary formations throughout England (Porter, 1977: 143, 214, 183). In encouraging the collection of fossil remains and series of rock specimens in other countries, British geologists aimed to extend their accounts of the structure and succession of strata. As the *Manual of Scientific Enquiry* pointed out, some of the most important problems in geology depended on the naturalist in distant regions for resolution. By carefully collecting fossils he could help determine whether formations corresponded to those of Europe, or to periods when sedimentary beds either had not been accumulated there or had been deposited but subsequently destroyed. Those 'geologis[ing] in countries little frequented' might provide new evidence for deciding whether the oldest rocks were everywhere the same (Herschel, 1886: 173–74). J. W. Salter, paleontologist to the Geological Survey, wrote in 1858 that 'What we want, in the present state of geology, is *abundance of good facts*, and these can only be collected by the industry of local observers.'. Like the superiority of the national museum, the progress of British geology—clearing up 'critical and obscure points' remaining as its 'opprobia'—depended upon the labours of far-flung workers (Salter, 1858: 301).

Natural history publishing: the importance of proprietary journals

Closely associated with the growth and development of natural history, a number of journals devoted to one or more of its branches began publication from London around the 1850s. For geology in particular, several commercial or proprietary periodicals were founded as supplements or alternatives to publications issued by the Geological Society of London (Jones, 1864: 4). The Society's *Transactions* and *Proceedings* had been beset by the kinds of problems that plagued nearly every nineteenth-century scientific journal—high publishing costs and limited sales. Both series expired by mid-century, but the *Quarterly Journal of the Geological Society*, created in 1844, managed to survive a precarious infancy. Officers of the Society insisted that because of the

Quarterly Journal's limited size, papers of merely local interest and controversial communications that might provoke lengthy discussion should be rigorously excluded (H. B. Woodward, 1908: 155–7, 257).

In contrast to the policy of the *Quarterly Journal*, the *Geological Magazine*, founded in 1864, welcomed precisely those 'hypothetical memoirs' that the Geological Society wanted to avoid. Although the *Magazine* was not the sole 'public journal of Geology in Great Britain', as it told its readers, its longevity contrasted sharply with the short career of Charles Moxon's *Geologist* or S. J. Mackie's *Geological and Natural History Repertory* (Jones, 1864: 3–4; H. B. Woodward, 1908: 145)[10]. Even its format and organization sixty years later looked almost identical to the first number (Rastall, 1922: 1). Henry Woodward was responsible for the *Magazine*'s successful formula for more than half a century, editing hundreds of issues while also serving on the British Museum staff. He accepted papers from aspiring young geologists, as well as from those whose contributions had been rebuffed elsewhere (Rastall, 1921). Under Woodward's direction the journal provided a medium for discussion of geological topics 'whether on orthodox lines or otherwise'. For his judicious and tactful editorial supervision, Woodward received warm letters from satisfied subscribers, grateful contributors and interested friends ([Anon.], 1921: 482).

Correspondence accompanying material submitted to the *Geological Magazine* sometimes contained succinct statements summarizing the author's view of the scientific value of his proposed article. The American geologist J. D. Dana, for instance, explained to Woodward that his works argued against using lithology to date crystalline rock formations. Dana considered the classification of metamorphic rock in New England ill-founded, since it had never been based on a stratigraphic study of the region[11]. Other correspondents commented upon reviews of their books. The geographer Elisée Reclus, arrested for his part in the upheaval associated with the Paris Commune of 1871, wrote to Woodward from prison about the *Magazine*'s analysis of his work, *The Earth* (Jenkins, 1872). Reclus agreed with the reviewer that certain portions of the first edition contained 'elements that were too fantastic' and lacked the desired 'sobriété scientifique'. Yet Reclus, understandably antagonistic towards his homeland at that point, objected because his critic identified this 'idealism' as a characteristic of French writers. Educated at the University of Berlin, Reclus claimed that Karl Ritter had been the greatest influence on his life and had 'germanized' his way of thinking[12].

Readers often asked Woodward's help in procuring monographs and copies of specimens that had been described in the *Geological Magazine*. Correspondents who recognized the international power that the journal commanded also enlisted his support for less tangible purposes. In the *Magazine*'s early years, A. C. Ramsay, then senior director of the Geological Survey for England and Wales, sent a note for the editorial page which praised Alfred Selwyn and his work heading the recently abolished Geological Survey of Victoria. Ramsay believed that the influence of the journal would weigh in the colonies: the communication might serve survey proponents in Australia and Selwyn himself as he assumed direction of the Canadian survey[13]. Nearly fifteen years later S. V. Wood, Jr, a second-generation geologist, turned to the *Magazine* in order to defend his father's scientific reputation from the 'slur so heedlessly cast upon him'. The younger Wood wanted to set Wood Senior's description of the Hordwell Cliffs strata, the work in question, 'clearly before the Geological World'. Wood, Jr, felt that the *Geological Magazine* could rescue his father's account from oblivion in the long-defunct and never very popular *London Geological Journal*[14].

The success of the *Geological Magazine*, reflected in its prestige, circulation and longevity, sets it apart from a periodical like the *London Geological Journal* that ceased after three issues[15]. Yet both journals belong to an important tradition of dissent from publications sanctioned by the Geological Society. The *London Geological Journal* was founded by Edward Charlesworth in 1846, one year after the Society's *Quarterly Journal* made its debut, in order to allow the 'unfettered expression of independent opinions' (Charlesworth, 1846: 28). In particular, Charlesworth's *Journal* intended to demonstrate that the progress of geology would be impeded by relying too much on 'authority' (Pearce, 1847: 77–78). Charlesworth argued that with so much 'men-worship' in the geological realm, 'he who attempts to scrutinize results associated with great names, unless it happened that he be one of a privileged set, will not fail to come under the

imputation of being actuated by disingenuous motives' (Charlesworth, 1847: 85). At the time when he created the *London Geological Journal* Charlesworth, who held posts at the British Museum and the Geological Society, was engaged in one of a series of acrimonious disputes with Richard Owen over the identification of fossil remains. Earlier he had provoked an enormous row among the members of the Geological Society when he applied for the curatorship vacated by William Lonsdale in 1842 (H. B. Woodward, 1908: 148). Charlesworth believed that those most bitterly opposed to his appointment had been Owen's friends who sat on the Council[16]. To avenge this treatment, he fashioned his *Journal* into an anti-Owen mouthpiece, featuring articles from naturalists who had suffered under Owen's abuse.

Nearly ten years before he founded the *London Geological Journal*, Charlesworth had taken over direction of the *Magazine of Natural History* from the horticulturist J. C. Loudon[17]. As a periodical dedicated to the diffusion of natural history, the *Magazine* did not confine itself to 'subjects of deep research' and the 'communications of experienced Naturalists' alone, but aimed to promote scientific pursuits among all classes of observers (Loudon, 1836: iii). The sailmaker and shell collector Hugh Cuming, who wrote to Charlesworth from Manila, found the journal especially interesting because he had been absent for so long from 'any thing like public discussion on scientific subjects'[18]. Charlesworth's skill at recruiting a broad readership alarmed other entrepreneurs in the field of science publishing. The frugal publisher of the rival *Annals of Natural History*, Richard Taylor, was so concerned about his competitor's success that he intended to consider 'whatever terms he might offer' if Charlesworth would agree to sell the copyright to his *Magazine*[19].

The *Geological Magazine* also allowed naturalists separated by oceans and continents from European cultural centres to learn about recent scientific developments. Working without the museums, libraries and learned societies of their fellow practitioners in Britain, colonists were acutely aware of their deprived circumstances (Gunther, 1975: 163). Robert Etheridge, Jr, then assistant geologist to the Geological Survey of Victoria, asked for any 'oddments of literature' that Woodward could spare[20]. C. H. Hitchcock approached Woodward on behalf of a group of young American geologists who wanted a formal affiliation with the *Magazine*[21]. Hitchcock and his colleagues, who later established the Geological Society of America, complained of 'no strictly geological magazine or journal in America' and 'no sufficient avenue of publication of the work of

Two natural history engravers: *left*, Joseph Lowry; *right*, Harrison Weir.

geologists and especially of paleontologists'[22]. They claimed that their association would enlarge Woodward's *Magazine* by adding a fuller discussion of American geological topics and increasing the number of American subscribers[23].

For the *Geological Magazine* and the *Magazine of Natural History*, problems of content and distribution—acquiring contributors and readers—were less formidable than technical difficulties, such as finding well-executed illustrations that could be reproduced. Many correspondents, like Richard Owen, were eager customers for the skilful natural history drawings of Gertrude M. or one of Henry Woodward's other four daughters. If the plight of one American naturalist is at all representative, scientists in England found capable artists more readily than did their foreign colleagues[24]. After a competent artist was located, however, the original drawing had to be reproduced by means of woodcuts, engraved metal plates or lithographic stones. Since detailed, accurate renderings were particularly important in natural history publications, authors consulted Woodward about problems like preparing woodcuts from photographs or duplicating geological maps[25]. Even the photomechanical processes employed by the 1890s were not without imperfections. One author complained bitterly that the method used by the *Geological Magazine* had produced a caricature of his original drawings[26].

Amateurs to professionals

Whether contributors to the *Geological Magazine* or visitors to the British Museum, Woodward's correspondents came from diverse educational and social backgrounds. They cultivated geology for differing reasons under a variety of circumstances. An older generation, born around 1800, included names associated with the 'Golden Age of Geology'—Charles Lyell, Adam Sedgwick, William Buckland, Roderick Murchison and Henry De la Beche. Men like Archibald Geikie, W. J. Sollas and J. W. Judd, born in the 1830s and 1840s, belonged to the next geological generation. Linking these two groups were a number of father-and-son naturalist teams: the Carpenters, the Etheridges, the Woods, and, across the Atlantic, the Danas and the Dawsons.

By revealing the scientific pursuits and the course of careers of Victorian natural historians over nearly a century, the Woodward collection provides a long view of disciplinary dynamics. Most early nineteenth-century naturalists were amateurs—doctors, lawyers or landed proprietors whose scientific interests occupied leisure hours. As the century progressed, increasing numbers found full-time work as scientists. Positions were available at teaching institutions, with local natural history museums and botanical gardens, and in national organizations like the British Museum and the Geological Survey. In time these institutions would be replicated throughout the empire, providing additional scientific employment for educated Britons, as well as for colonial practitioners. Still, the quickened rate of professionalization following the creation of the British geological survey induced stresses and strains, particularly among institutions that had been created and directed by amateurs.

Two social groups have been associated with the rise of English geology in the opening decades of the nineteenth century. In one group were mining consultants and professional surveyors, largely provincial men who espoused utilitarian Baconianism and focussed their attention on geological strata. The second group comprised affluent, well-educated members of the liberal professions and gentlemen of leisure who usually lived in the metropolis (Porter, 1977: 135–38). Excluded from this account of the heterogeneous interests accommodated by geology are those observational naturalists and collectors who lacked even elementary training in science yet who were not associated with mineralogical exploitation of the British Isles. Aware of the deficiencies of their educational background, they depended upon others to generalize the 'facts' that they uncovered.

Typical of the autodidact neglected by Porter is one of the most famous collectors of the early nineteenth century, Mary Anning, discoverer of *Pterodactylus* and *Ichthyosaurus*. Owner of a curiosity shop in Lyme Regis where she sold fossils and shells like her cabinet-maker father before her, Anning wrote to Charlesworth lamenting that she could not classify some material because 'as I am illiterate [I] am not able to give a correct opinion'[27]. Another observer, Hugh Cuming, constantly sent natural history objects from the Pacific to scientists in London. Although he thought that these curiosities would occupy zoologists for years to come, his own

Mary Anning

'defective Education' did not allow him to describe any of the specimens[28]. Despite limitations imposed by their incomplete training, both Anning and Cuming were professional naturalists, living from their skill as collectors. Both were well acquainted with London scientific worthies. Anning knew De la Beche, Buckland, William Conybeare, Egerton, Enniskillen and Murchison; Cuming contracted his services to the Zoological Society of London and won the praise of Richard Owen (Lang, 1935; Zuckerman, 1976: 18–19, 30; Owen, 1895: 313–17). By channelling their discoveries through naturalists with greater knowledge and resources, science workers like Anning and Cuming helped support the theory-construction and synthetic interpretations of others.

Two developments soon moved these early collectors and engineers to the periphery of the geological discipline. The amateur tradition supported by well-to-do practitioners was revitalized while job opportunities for career geologists began to expand markedly (Porter, 1978: 817, 829). As William Swainson predicted in 1834, natural history studies became the province of the better educated and the more prosperous—'the man of leisure and of learning; . . . those installed in public museums, or possessors of extensive collections or libraries' (Swainson, 1834: 194). Often a 'social accident of biography' made a talented and well-endowed young man forsake his chosen profession (Porter, 1973: 342–43). T. Rymer Jones left medicine for natural history because of deafness. John Ball's political defeat led him to science rather than Parliament. Others with private fortunes 'retired' from their callings at remarkably early ages. William Lonsdale and Roderick Murchison, both born in the 1790s, quit the army to take up natural history after fighting in the Napoleonic wars. Charles Moore, a bookseller, chose his marriage as an appropriate time for leaving business and devoting himself to geological investigations. S. V. Wood resignedfromthe East India Company at age twenty-eight in order to pursue full-time palaeontological studies. His son, with the same predilections as his father, left his solicitor's practice when thirty-five years old for the sake of his natural history interests. Turned away from traditional careers by accident or design, independently wealthy naturalists like Lyell found that full-time scientific investigations still were not viewed as a legitimate vocation (Wilson, 1972: 325).

The event that did most to establish geology as an occupation and to alter the image of the typical British naturalist was the foundation of the Geological Survey in 1835. A mere glimpse of

Fossil collection of Charles Moore.

Geological Survey staff: *left*, J. W. Salter; *right*, William Whitaker.

W. T. Blanford: colonial surveyor.

the early surveyor arrayed in 'blue uniform, brass buttons and top hat' left little doubt of his serious function (Bailey, 1953: 37). The Survey hired scientists to help map the geological contours of the British Isles, to carry out laboratory investigations and research that assisted field workers, and to staff the Museum of Practical Geology, Mining Records Office and School of Mines. As Britain's colonies followed the successful model of the mother country, diverse positions opened in Australasia and North America for those willing to undertake the ocean voyage. The surveys sought men trained in geology, palaeontology and mineralogy, but they also needed chemists, botanists, fossil collectors and artists.

Around thirty palaeontologists and geologists who staffed geological surveys in different parts of the empire are represented in the Woodward collection[29]. With the advent of the British survey, for the first time a regular income could be earned from geological skills (Porter, 1977: 140). A recent study has suggested that the Geological Survey was by far the largest employer of geologists in Britain throughout the nineteenth century. However, the authors vastly underestimate the size of the undertaking, because field geologists alone are included, while their colleagues housed at headquarters and professional fossil collectors are ignored (O'Connor & Meadows, 1976: 80)[30]. The survey grew more rapidly than the study indicates; by the mid-fifties, it employed around twenty-five geologists just in the field staff (Bailey, 1953: 63)[31]. Possibly at the height of expansion, personnel amounted to seventy-seven in 1868 (Flett, 1937: 76)[32]. The number of geological workers halved between 1881 and 1885, due to completion of the primary survey of the British Isles in 1883 (O'Connor & Meadows, 1976: 88, n. 13). But as opportunities diminished in Britain, surveys in the colonies required geologists, preferring, of course, those with experience. In Australia surveys were founded in every state by the last quarter of the century (Andrews, 1942: 106–10).

Due to unparallelled opportunities for field experience and the steady growth of its research facilities in London, the Geological Survey became a great school for training geologists. The first contingent of surveyors recruited in the late eighteen-thirties and early eighteen-forties had little or no previous training in earth sciences. Their deficiencies reflected the primitive state of instruction in geology at the time. Lectures in the subject had been delivered in several British universities during the eighteenth century, but not until around 1820 did it become a regular feature of the curriculum (Porter, 1977: 144). In 1819 a readership in geology was endowed at Oxford. When Sedgwick became Woodwardian professor at Cambridge in 1818, he began to teach the science there systematically. In London, the Royal Institution occasionally included geology in its lecture courses, while the University of London endowed a chair only in 1841 (H. B. Woodward, 1908: 54, 88). By the time of Ramsay's tenure as survey director in 1871, the teaching of geology in universities had advanced considerably (Flett, 1937: 95). Positions increased as municipal universities and university colleges founded geology departments late in the century,

displacing the subject from its old tutelage under natural history. By 1900, at least sixteen British universities offered courses in geology and mineralogy (O'Connor & Meadows, 1976: 79–80).

As a result of greater opportunities in surveys and universities, the community of professional geologists began to grow rapidly from 1850 onwards. By the last decades of the century tensions began to appear in institutions swelled with professionals, yet designed and still supported by amateurs. Within the ranks of the Geological Survey, for example, geologists had always been accustomed to considerable mobility. A. C. Ramsay, hired as a field geologist in 1841, became Local Director for Great Britain in 1845. Edward Hull and H. H. Howell, who both joined the staff in 1850, became, respectively, Director for Ireland in 1869 and Director for Great Britain in 1888. By the 1880s and 1890s, however, prospects for promotion were reduced drastically, because of a glut created from the many field geologists hired during the late sixties (Bailey, 1952: 31, 35, 140–41). Doing little to ease the resentment and confusion created by this situation, the usually close relations between the Survey and the Geological Society became strained around the same time. This conflict perhaps reflected differences between professionally-minded surveyors and the Society's predominant amateurs. In 1885, just after the Geological Society's membership peaked at 1361, its president defended the value of contributions from part-time practitioners. In T. G. Bonney's opinion, 'the discovery of truth' was not confined 'to any age or any workers' (H. B. Woodward, 1908: 256, 220). The president of the Geologists' Association, too, submitted that geology had always owed its main progress to amateurs (H. B. Woodward, 1894: 247). All protests aside, by the end of the century the advent of the professional had irrevocably altered the character of the discipline.

Power, politics, and patronage

The fostering of high standards for both amateur and professional geologists was enhanced by the growing numbers of natural history societies scattered throughout Great Britain. These societies established procedures for refereeing specialist papers, and rewarded outstanding contributions with medals and prizes (Rudwick, 1972: 201). Despite their common commitment to the promotion of scientific activity, societies squabbled among themselves and vigilantly guarded

Palaeontographical Society.

their rights and privileges. Far from the image of a republic of science, membership in these organizations and association with their governing councils corresponded to a hierarchy of power, each society exercising influence in scientific affairs proportional to its exclusiveness. At the pinnacle was the Royal Society of London; just below it came other national organizations like the Linnean Society and the Geological Society. Beneath them on the pyramid were metropolitan societies, for instance, the informal London Clay Club or the Palaeontographical Society that advertised for members in the *Geological Magazine*[33]. Closer to the base were societies removed from the scientific glitter and intensity of London, such as geological societies at Liverpool, Leeds, Glasgow, and Edinburgh. Most important for the youths attracted to local field clubs, they might hope to become 'some of the most celebrated of our metropolitan magnates' ([Anon.], 1865: 337–38).

Many naturalists coveted election to the circumscribed ranks of the Royal Society of London. As young Robert Etheridge wrote to Woodward from Australia: 'I wish I could get the FRSship; it is the only thing worth having and would give me a tremendous jump here'[34]. Another geologist, who had already secured the patronage of Lyell, was advised to submit a paper twenty-five to thirty-five quarto pages long, 'together with a statement of your pecuniary position and a detailed list of your publications'. He was warned that the paper should not be wholly descriptive, but should contain some speculation or generalization[35]. Apart from official requirements for admission, certificates of Royal Society candidates often followed convoluted courses in order to amass the proper number of important signatures—ten good names would suffice, said one correspondent[36]. M. H. N. Story-Maskelyne urged Woodward to get W. H. Flower's signature and a few more FRS friends added to Lazarus Fletcher's application. Maskelyne planned to forward it to Oxford for more signatures, and, finally, to Henry Roscoe and participants in the British Association for the Advancement of Science meeting at Manchester. Maskelyne wanted Fletcher's certificate 'well signed before hanging it up'[37].

Geologists and geological pursuits commanded less respect in the eyes of the Royal Society than physical scientists and their work. One aspirant to membership was cautioned that 'unless a geological paper be of high merit it does not meet in the Royal Society such acceptance as one in terrestrial magnetism, electricity, chemistry'. A number of 'meritorious' geologists like Woodward were still excluded from the Society in the early 1860s because of its high entrance fee[38]. The Royal Society's condescending attitude towards geology may perhaps be understood in terms of jealousy towards a sibling who was claiming more attention and noisily challenging the absolute authority of its elder sister. For by the 1830s, the Geological Society of London, founded amidst protests from the Royal Society in 1807, had become both fashionable and scientifically significant[39]. It was composed, wrote Sedgwick, of 'robust, joyous, and independent spirits, who toiled well in the field, and who did battle and cuffed opinions with much spirit and great good will' (Clark & Hughes, 1890: 298). Charles Babbage excepted the Geological Society in his description of the decline of science in England, and no important geologist refused to join the organization (Porter, 1977: 148). No longer the exclusive prerogative of the Royal Society, matters relating to geological sciences were referred to influential members of the Geological Society by governments and universities alike.

The rolls of the Geological Society listed distinguished fellows by the 1830s—peers, members of parliament, landowners, and bankers (Flett, 1937: 23–24). Both Darwin and Owen joined the Society in the mid-1830s (H. B. Woodward, 1908: 126). During the same decade, Murchison, Sedgwick, Lyell, G. G. Greenough, William Whewell and Buckland served as president; secretaries included De la Beche and Darwin (Flett, 1937: 13–14). In addition to attracting premier scientists to its membership and council, the Geological Society nurtured and protected offspring whose geological and palaeontological interests complemented its own. The Palaeontographical Society, which grew out of the fossil-collecting London Clay Club in 1847, held its meetings in the rooms of the Geological Society. Many of its local secretaries were fellows of the older Society. Some ten years later the Geologists' Association was created by Thomas Wiltshire, James Tennant and S. J. Mackie, all members of the Geological Society (H. B. Woodward, 1908: 162–63, 207). In the view of its founders, the new organization would diffuse geological knowledge to those who possessed neither the time nor means to master the subject and become fellows of the

Field excursions.

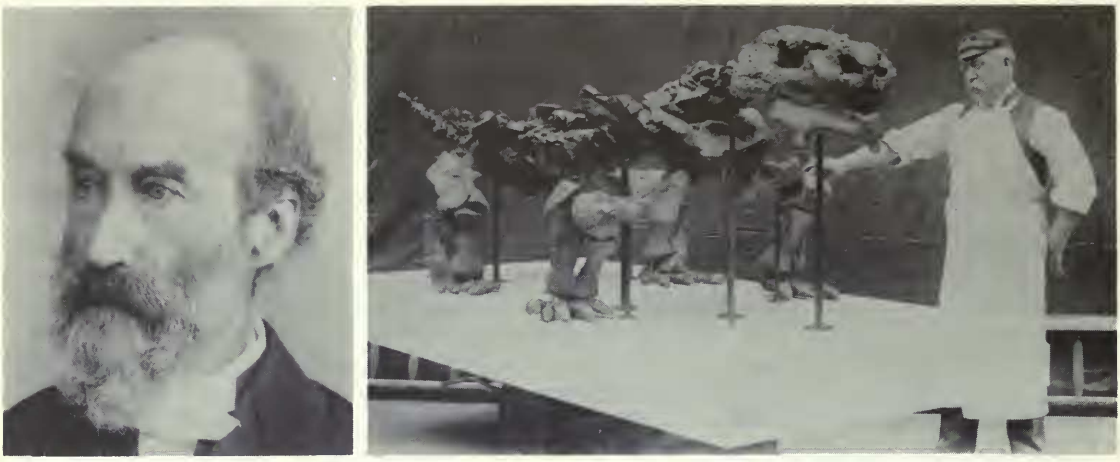
parent institution (Jones, 1880: 11). Unlike the shortlived Junior Geological Club, started in London in 1864 by Society members, the Geologists' Association achieved lasting success through its popular excursions in the British Isles and abroad (H. B. Woodward, 1908: 207–8). The president of the Geologists' Association reaffirmed its symbiotic relationship with the Geological Society at the anniversary celebrations of its thirtieth year: 'If the Society represents the fountain head of geological wisdom, we rather represent the cistern which receives this knowledge from its source and distributes it in a convenient form, rendering it accessible to many who would find it less easy to drink directly from the primal fount' (H. B. Woodward, 1894: 270). At the annual meetings of the British Association, the Geological Section filled the largest meeting hall for six days notable for their liveliness and interest (Forbes, 1852: 67). During, roughly, its first sixty years of meetings, geologists presided over the Association eighteen times (Kennard, 1947: 291).

The influence of the Geological Society was nowhere more apparent than in the direction of the geological surveys, both in Britain and in the colonies. Contemporaries argued that the British survey should be seen as the child of the Society (H. B. Woodward, 1908: 100). When De la Beche was appointed to the Ordnance Survey to colour geological maps in 1832, he was serving as secretary of the Geological Society. Three years later the Society's president, Charles Lyell, along with Buckland and Sedgwick representing geological sciences at Oxford and Cambridge, advised the government to establish an independent geological survey (H. B. Woodward, 1908: 105). De la Beche's successor as survey director, R. I. Murchison, had served also as secretary and president of the Geological Society. Even William E. Logan's appointment to

direct the Canadian survey was supported by the Society's president. As an officer of the Geological Society, Woodward's recommendations, too, could help secure appointments to survey staffs. The mineralogist and applied geologist J. E. Carne, who asked Woodward to support his application, received a position with the survey of New South Wales[40]. J. F. Whiteaves insisted that Woodward's testimonial had been instrumental in his nomination as palaeontologist to the Geological Survey of Canada[41].

Just as the endorsement of the Geological Society served as a stepping stone to a survey position, affiliation with the Survey eased entry to even more important scientific posts. Joseph Hooker wrote to a friend upon his nomination as botanist to the Survey in 1846 that his new position 'threw him very much into a new world and class of society in London, such as the Lyells, Owen, and Horner'. The new appointment was 'a most honourable one', 'worth twice the income it offers' (Huxley, 1918: 207–8). After nine years of service there, Hooker moved to the Royal Botanic Gardens at Kew, where he became assistant director and then director a decade later. Edward Forbes, also hired during De la Beche's administration in 1844, left the Survey after ten years to assume the natural history chair at Edinburgh. Upon Forbes's early death, T. H. Huxley, then naturalist to the Survey, was offered the vacant Edinburgh professorship, which he declined (Flett, 1937: 56, 66). James Geikie, employed by Murchison, later became professor of geology at Edinburgh (Bailey, 1952: 102). Ramsay's staff of the 1870s eventually filled geology chairs at Oxford, Cambridge, Manchester, Edinburgh, Glasgow, Dublin, Newcastle, Leeds and London (Flett, 1937: 95). Participation in the survey of Great Britain could also lead to supervising a colonial survey. Thomas Oldham, local director for Ireland from 1846 to 1850, left to manage the geological survey of India (Bailey, 1953: 35). Peripatetic A. R. C. Selwyn, 'one of the ablest of the staff' in Britain, led the survey of Victoria for more than sixteen years (Andrews,

Thomas McKenney Hughes: Professor of Geology, Cambridge.



Competitors for the geology chair at University College, London: *left*, T. G. Bonney; *right*, H. G. Seeley.

1942: 107). Upon its abolition in 1869 he became head of the Canadian enterprise (Zaslow, 1975: 100). Britain's Geological Survey also furnished directors for surveys in Greenland and Kashmir (Flett, 1937: 95).

London geological luminaries like Woodward who helped determine the composition of surveys also influenced appointments in geology at British teaching institutions. Although Henry Woodward received an honorary LL.D. from St Andrews in 1878, his own training in science had consisted of three years as an 'out-student' at the Royal Agricultural College in Cirencester. Geologists nonetheless turned to him for support when seeking one of the relatively scarce university positions (Gunther, 1975: 260–61). In 1873, Thomas McKenney Hughes asked Woodward to back his candidacy for the Woodwardian professorship of geology at Cambridge, vacated by the death of Adam Sedgwick. In preparation for the contest, Hughes had already obtained recommendations from Sir Charles Lyell and A. C. Ramsay, by then Director General of the Geological Survey of Great Britain. In a postscript to his letter to Woodward, Hughes noted that he would not send in his application until 'we have laid the poor old man in the grave' but that he must 'like all the others be getting ready'[42]. Four years after Hughes's efforts won him the Cambridge position, two rival candidates asked Woodward to support their applications for the chair of geology at University College, London. T. G. Bonney received the appointment, but his competitor, H. G. Seeley, insisted that nothing could help him more than Woodward's influence 'with all sorts and conditions of men'[43]. As British Museum keeper, long-time journal editor and president of five London natural history societies during the last quarter of the nineteenth century, Woodward's patronage contributed to defining the personal features of the institutional framework for geology that he had shaped.

The end of the 'geological century'

Around the turn of the century, three geologists reflected on the history of their discipline over the past century. They mentioned a number of sociological factors responsible for the remarkable progress of the science. Rationalization of collections at the British Museum (Natural History) and the Museum of Practical Geology had improved facilities for study. A wealth of texts, particularly the writings of Sedgwick, Murchison, Buckland, Lyell, Forbes, Ramsay and Geikie, had convinced young men and women to take up geological pursuits. Meetings of scientific societies and their publications had been similarly persuasive. Geological surveys had advanced the quality and quantity of maps, while natural science instruction at the university level had become widely available (Rudler, 1888; H. B. Woodward, 1894; H. Woodward, 1904).

Despite their satisfaction with institutional configurations, these geologists wrote as if exciting theoretical syntheses and stimulating new insights no longer characterized current disciplinary practice. Their accounts suggest that they were experiencing the decline of the 'Golden Age' of

geology and living in the shadow of its greatest practitioners. Writing in 1876, Woodward remarked that the last decade had claimed Jukes, Salter, Murchison, Sedgwick, Phillips and Lyell—'names which include the most distinguished geologists that have been, and whose careers are hardly likely to find in the future an equally brilliant counterpart' ([Anon.], 1876: 1). Following the momentum given to the science by these pioneers had now come a period of 'hard work, detailed observation, minute subdivision, involved classification, and pedantic nomenclature' (Watts, 1903: 439). Fewer individuals turned to geology as a profession and others asserted that the discipline was 'played out'. There was still a need for field work like fossil collecting, wrote Henry's nephew, Horace B. Woodward, but treatment of more important questions depended upon the experienced 'arm-chair geological veteran' or those conducting specialized research in museums and laboratories (H. B. Woodward, 1894: 247, 252, 263).

At century's end geologists no longer hotly debated theological, philosophical and methodological questions (Kitts, 1973: 261). Stratigraphical studies had become pre-eminent with the introduction of zonal classification among fossiliferous formations, the rise and development of glacial geology, and the multiplication of detailed maps (Geikie, 1905: 438). Methods and conventions for dividing, classifying and labelling sequences were established (Zaslow, 1975: 30). Earlier controversies had dissipated and practitioners refined the details of commonly shared principles. The 'revolutions of opinion in matters geological', so disturbing to careers of science workers like Edward Charlesworth, ceased to convulse the disciplinary world[44]. No longer was the geological community divided by conflicts between Neptunists and Vulcanists, Uniformitarians and Catastrophists, or 'Silurians' and 'Cambrians' (Porter, 1977: 214–15). No younger naturalist appeared to assume the place of the ageing Richard Owen, who had never hesitated to challenge the palaeontological interpretations of his brother naturalists (H. B. Woodward, 1908: 177).

Perhaps because the general outlines of geology were fixed by the late nineteenth century, the number of first-class recruits to the science declined in Britain. The quantity of papers and monographs continued to increase rapidly, but their character and content became routine (Rudwick, 1972: 264–65). As the descriptive geology of the British Isles neared completion, local stratigraphical studies lost their intellectual importance. Just when British geology sought 'an epoch of more important generalisation' to unite the scattered labours of naturalists throughout the country, the centre of gravity of the discipline began to shift from London to other continents (Watts, 1903: 439). The impetus for organizing the first in a series of triennial international geological congresses came from the American Association for the Advancement of Science in 1876 (Frazer, 1888: 3). During the 1880s, new national publications appeared to rival or complement the *Geological Magazine*, for instance, the *American Geologist* and the *Annuaire géologique*. Recognizing the impressive array of university positions, government surveys and scientific societies in the colonies, the council of the Royal Society urged the creation of a scientific federation of the empire (Dawson, 1887). By the end of Victoria's reign it seemed that the long-awaited post-evolutionary synthesis in geology might come about through the efforts of those 'poor colonial niggers' working on the periphery of British culture[45].

Acknowledgements

I should like to thank Eleanor Maclean, head librarian of the Blacker-Wood Library, for her kindness in providing access to the Woodward collection. Lewis Pyenson offered valuable comments and suggestions.

Notes

Unless otherwise indicated, all names and dates refer to letters in the Woodward collection. See index to the collection (pp. 198–226) for fuller information.

1 On 'rewriting history from below' see the review essay by Darnton (1975).

2 For example, J. D. Dana, 3 Dec. 1880; J. S. Henslow, 15 Dec. 1844.

3 T. Davidson, 28 June 1885; G. Maw, 31 Jan. 1885; A. Agassiz, 2 March 1895.

4 For example, R. Owen, 9 March 1888.

5 W. B. Dames, 20 June 1886; A. von Koenen, 15 Dec. 1877.

6 E. E. Deslongchamps, 13 July [1885?]; F. E. Edwards, 8 Feb. 1873; J. S. Bowerbank, 27 Dec. 1868.

7 H. W. Feilden, n.d.; 12 Nov. 1878; 24 April 1878.

8 L. W. Rothschild, 2 Aug. 1893.

9 G. Lindstroem, 2 July 1874; F. Major, 13 Dec. 1891; A. S. Woodward, 10 May 1891.

10 On the *Geological and Natural History Repertory* see Sheets-Pyenson (1976: 98–9, 105, 230).

11 J. D. Dana, 3 Dec. 1880.

12 E. Reclus, 6 Jan. 1872.

13 A. C. Ramsay, 28 Dec. 1869.

14 S. V. Wood, Jr, Dec. 1883.

15 In 1866, the *Geological Magazine* claimed that it had maintained an average circulation of more than 700 monthly since its creation ([Woodward, H.], 1866: 1).

16 Edward Charlesworth to Adam Sedgwick, 3 Oct. 1842. Sedgwick correspondence, Add. 7652, I.D. 164b. University of Cambridge Library.

17 On the *Magazine of Natural History* see Sheets-Pyenson (1976: 96–7, 99–104, 207, 209, 229, 240).

18 H. Cuming, 10 Nov. 1839.

19 Richard Taylor to Sir William Jardine, 24 and 26 Oct. 1839. Jardine Papers, Royal Scottish Museum.

20 Robert Etheridge, Jr, 19 Feb. 1890.

21 C. H. Hitchcock, 21 May 1883.

22 'Circular letter to the Geologists of America', J. W. Dawson papers, Acc. 2211, file 114. McGill University Archives.

23 C. H. Hitchcock, 21 May 1883.

24 P. Egerton, 1 July 1877.

25 For example, J. Gunn, 17 Aug. 1883; M. Fraser, 1 Aug. 1893.

26 C. Lapworth, 26 Nov. 1891.

27 M. Anning, 12 July 1839.

28 H. Cuming, 10 Nov. 1839.

29 Baily; Barrett; Blanford; Bristow; Carne; Dawson, G. M.; De la Beche; Etheridge, Sr; Etheridge, Jr; Geikie, A.; Hardman; Hector; Howell; Jukes; King; Logan; Medlicott; Murchison; Oldham; Ramsay, A. C.; Rutley; Salter; Strangways; Teall; Topley; Whitaker; Whiteaves; Woodward, H. B.

30 Sometimes, but inconsistently, O'Connor and Meadows give aggregate figures (field staff plus headquarters), for example, their total of 73 for the period of 1872–81.

31 Against the figure of seven given by O'Connor and Meadows (1976).

32 O'Connor & Meadows (1976) give 57.

33 T. Wiltshire, 9 April 1886.

34 Robert Etheridge, Jr, 19 Feb. 1890.

35 J. J. Bigsby to J. W. Dawson, 27 April 1861. J. W. Dawson papers, Acc. 2211, 'Old Scientific Letters'. McGill University Archives.

36 P. M. Duncan, 14 Nov. 1871.

37 M. H. N. S. Maskelyne, 28 July n.d.

38 See note 35.

39 On the problems encountered by the young Geological Society see Rudwick (1963). According to Lauden (1977), the fortunes of the Society improved markedly in the early 1820s with the influx of new, younger members no longer committed to neo-Baconian inductivism.

40 J. E. Carne, 12 May 1892.

41 J. F. Whiteaves, 22 Sept. 1876.

42 T. Mc. K. Hughes, 29 Jan. 1873.

43 H. G. Seeley, 5 Sept. 1877.

44 Edward Charlesworth to Adam Sedgwick, 2 April 1860. Sedgwick correspondence, Add. 7652 II. 0.35. University of Cambridge Library.

45 H. Trimen, 11 Aug. 1889.

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My cut-off date for secondary sources is 1979.

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Index to the collection

The alphabetical list below contains the names of individuals whose letters, autographs and portraits appear in volumes I to IX and XI of the Woodward collection. Ellen Woodward pasted letters into the volumes in nearly rigorous alphabetical order according to correspondent, usually identifying the writer in some detail. In order to make the volumes easier to consult, I have followed her method of listing titles and hyphenated names, cross-referencing these to more familiar usages.

I have provided biographical information on correspondents, when available. In addition to 'capsule' identifications, similar to those supplied by the *Dictionary of National Biography*, I have included notable institutional affiliations, for instance, with universities or geological surveys. Several positions are listed when the individual later obtained a prominent appointment, different from the one at the time of correspondence. All associations with the British Museum are also indicated. My object is not to supply detailed biographies of correspondents, but rather to place them in a taxonomy as they relate to Woodward and the other recipients of letters.

The roman numeral given in each entry refers to the number of the volume where items appear. The total number of letters, autographs, portraits and biographical notices for each individual is noted. The designation 'portrait' often includes magazine or newspaper clippings, as well as higher quality engraved plates or postcards. Photographs, pencil sketches and cartoons are listed as such.

Unless otherwise indicated, the recipient of all letters was Henry Woodward. Those addressed to his wife Ellen are marked 'E.W.'; those to one of his daughters, 'Miss W'. Letters whose recipient is unknown show 'u.r'. Correspondence was carried out in English, except where noted otherwise. My own additions to names, dates and addresses in letters are placed within brackets. Uncertain information, often illegible handwriting, shows a bracketed question mark. Addresses are abbreviated to appropriate cities, towns or villages, but some county names appear when no more specific information was provided. London addresses are entered as a specific district or borough when so indicated by the author, a street name or an institutional location.

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Biographical information provided by Ellen S. Woodward has been verified and supplemented by the following sources:

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ABEL, Sir Frederick Augustus (1827–1902) I
Chemist and government scientific advisor.
1 letter: London, 2 June 1894.
1 portrait (photo).

AGASSIZ, Alexander (1835–1910) I
Zoologist, oceanographer, and engineer. Director, Museum of Comparative Zoology, Harvard University.
3 letters: Key West [Florida], 15 April 1881; [London?], 24 March 1886; Plymouth, 2 March 1895.
1 portrait (photo).

AGASSIZ, Jean Louis Rodolphe (1807–1873) I
Palaeontologist and geologist. Professor, Harvard University.
2 letters: Neuchâtel, 13 Nov. 1837, to Charles Koenig, (German); London, 11 [illeg.] 1835, to Edward Charlesworth, (French).
1 portrait (photo).

ALLMAN, George James (1812–1898) I
Botanist and zoologist. Regius Professor of Natural History and Keeper of the Natural History Museum, University of Edinburgh.
2 letters: Beckenham, 20 [June?] 1872; St Leonards, 28 July 1872.

AMHERST, afterwards CECIL, Hon. Alicia Margaret Tyssen (1835–?) I
Horticultural writer and Baroness of Hackney.
2 letters: Brandon (Norfolk), 19 Oct. [1894]; Brandon (Norfolk), 2 Nov. 1894.

ANDERSON, Elizabeth Garrett (1836–1917) I
Physician. Dean and lecturer on medicine, London School of Medicine for Women.
1 letter: London, 5 Jan. 1889, to E.W.

ANNING, Mary (1799–1847) I
Fossil collector at Lyme Regis and discoverer of ichthyosaurus.
1 letter: Lyme Regis, 12 July 1839, to Edward Charlesworth.
1 sheet of 'pensées'.
1 portrait.

ARGYLL, Duke of. See CAMPBELL.

ARNOTT, Neil (1788–1874) I
Physician and natural philosopher.
1 letter: n.p., n.d. (8 June), to u.r.

AUSTIN, Stephen (1804–1892) I
Printer.
1 portrait.

BAILY, William Hellier (1819–1888) I
Palaeontologist and geologist. Palaeontologist to Geological Survey of Ireland. Assistant curator, British Museum, 1837–44.
1 letter: Dublin, 25 April 1861, to J. W. Salter.

BALFOUR, Sir Isaac Bayley (1853–1922) I
Professor of botany and Regius Keeper of the Botanical Gardens, University of Edinburgh.
1 letter: Edinburgh, 8 Jan. 1900.
1 autograph.

BALL, John (1818–1889) I
Politician, alpine traveller, and science worker.
2 letters: S. Kensington, 24 Sept. [1877]; S. Kensington, 27 Sept. 1877.

BALL, Sir Robert Stawell (1840–1913) I
Astronomer and mathematician. Astronomer Royal of Ireland and professor of astronomy, University of Dublin. Later, professor of astronomy, Cambridge.
1 letter: Dublin, 17 May 1892.
1 portrait.

BALL, Valentine (1843–1895) I
Director, Science and Art Museum, Dublin.
2 letters: Dublin, 8 Jan. 1890; Dublin, 12 Sept. 1891.

BALL, Wilfrid (1853–1917) I
Etcher and watercolour painter.
1 letter: London, n.d., to E.W.

BARRANDE, Joachim (1799–1883) I
Palaeontologist and stratigrapher.
1 letter: Prague, 1 Aug. 1878, (French).
1 portrait (photo).

BARRETT, Lucas (1837–1862) I
Geologist and naturalist. Director, Geological Survey of Jamaica.
1 letter: Cambridge, 29 Oct. 1856, to S. P. Woodward.

BATE, Charles Spence (1818–1889)
Science writer and dentist.
2 letters: Plymouth, 3 Aug. 1877; Plymouth, 5 Nov. 1883.

BATES, Henry Walter (1825–1892) I
Naturalist. Assistant Secretary, Royal Geographical Society.
2 letters: London, 12 Oct. 1878; London, 9 Nov. 1886.

BECKLES, Samuel Husband (1814–1890) I
Geologist and former barrister.
2 letters: St Leonards, 29 [illeg.] 1885; St Leonards, 21 Jan. 1888.
1 portrait (photo).

BEDFORD, Eleventh Duke of. (Herbrand Arthur Russell) (1858–1940) XI
Science patron, especially in zoology.
1 letter: Woburn Abbey (Bedfordshire), 8 June 1903.

BELL, Thomas (1792–1880) I
Dental surgeon and zoologist. Professor of zoology, King's College, London.
3 letters: Selborne, 17 Feb. 1862, to R. G. P. Mintz; Selborne, [1874], to R. Owen; Selborne, 11 June 1874.

BELT, Thomas (1832–1878) I
Geologist and mining engineer.
1 letter: Ealing, 25 Feb. 1877.

BENETT, Etheldred (1776–1845) I
Geologist.
1 letter: Weymouth, 22 Nov. 1830, to Charles Koenig.

BIGSBY, John Jeremiah (1792–1881) I
Physician and geologist.
1 letter: Norwood, 16 Sept. 1877.
1 portrait (photo).

BLANFORD, William Thomas (1832–1905) I
Geologist and zoologist. Deputy superintendent, Geological Survey of India.
1 letter: Kensington, 13 June 1886.
1 portrait.

BOND, Sir Edward Augustus (1815–1898) I
Principal librarian, British Museum.
1 letter: London, 26 June 1883.
1 obituary with portrait.

BONE, Charles Richard (1808 or 1809–1875) I
Miniature painter. Draughtsman to the Museum of Economic Geology.
1 letter: n.p., 8 March 1875.

BONNEY, Thomas George (1833–1923) I
Geologist. Professor of geology, University College, London.
2 letters: Cambridge, 26 Aug. 1877; Hampstead, 6 Nov. 1888.
1 portrait.

BORRE, François Paul Charles Alfred Preudhomme de (1833–1905) I
Entomologist. Keeper, Royal Museum of Natural History, Brussels.
2 photographs.

BOUCHER DE PERTHES. See PERTHES.

BOWERBANK, James Scott (1797–1877) I
Geologist and distillery partner.
2 letters: [London?], 1 Oct. 1841, to R. Owen; St Leonards, 27 Dec. 1868.
1 autograph.
2 portraits (1 photo).

BRADY, Sir Antonio (1811–1881) I
Admiralty official.
3 letters: Stafford, [2 Aug. 1872?]; Stafford, 26 Nov. 1872; Stafford, 27 Feb. 1873.

BRISTOW, Henry William (1817–1889) I
Geologist. Director, Geological Survey of England and Wales.
1 letter: London, 25 Oct. 1877.

BRITTON, John (1771–1857) I
Antiquary, topographer, and miscellaneous writer.
1 letter: Tavistock, 17 Nov. 1828, to D. Hodgson.

BRODIE, Peter Bellinger (1815–1897) I
Clergyman and geologist.
1 letter: Rowington, 4 May 1872.
1 portrait.

BRONGNIART, Charles-Jules-Edme (1859–1899) I
Palaeontologist and zoologist. Assistant, Natural History Museum, Paris.
2 letters: Paris, 8 April 1883, (French); Paris, 26 May 1890, (French).

BROOME, Mary Anne (formerly Lady Barker) (1831–1911) I
Author and wife of governor of Western Australia.
1 letter: Perth (Australia), n.d. (2 July).

BROWN, Frederick (1851–1941) I
Landscape painter. Slade Professor of Fine Arts, University College, London.
1 letter: Fulham, 10 March 1893, to E.W.

BROWN, Henry Yorke Lyell (1844–1928) I
Geologist. Government geologist for South Australia.
2 letters: Adelaide, 14 March 1884; Adelaide, 26 Feb. 1890.

BROWNING, Robert (1812–1889) I
Poet.
1 autograph.
1 portrait.

BUCKLAND, Francis Trevelyan (1826–1880) I
Naturalist and science writer. Government inspector of fisheries.
1 letter: London, 27 Dec. 1871.
1 portrait.

BUCKLAND, William (1784–1856) I
Geologist. First reader in geology, Oxford, and Dean of Westminster.
2 autographs.
1 portrait (pencil sketch).
1 cartoon (1842).

BUSK, George (1807–1886) I
Palaeontologist, ethnologist and surgeon.
1 letter: London, 4 Nov. 1876.
1 portrait (photo).

BUXTON, Edward North (1840–1924) I
Public servant.
1 letter: Knighton, n.d. (8 May).

CADOGAN, Henry Arthur. See CHELSEA.

CALTHROP, Claude Andrews (1844–1893) II
Painter.
1 letter: London, n.d. (20 Feb.), to E.W.

CALVIN, Sidney (1845–?) II
Keeper of Prints and Drawings, British Museum. Slade Professor of Fine Arts, Cambridge.
1 letter: London, 29 Dec. 1892.
1 portrait.

CAMPBELL, George Douglas, Eighth Duke of Argyll (1823–1900) **I**
Politician and amateur scientist.
3 letters: London, 20 Jan. 1866; Inveraray, 28 Oct. 1884; Inveraray, 31 Oct. 1884.
1 portrait.

CAPELLINI, Giovanni (1833–1922) **II**
Professor of geology and palaeontology, University of Bologna.
1 letter: Bologna, 16 Feb. 1889.
1 portrait (photo).

CARNE, Joseph Edmund (1855–1922) **II**
Mineralogist and applied geologist. Staff, Geological Survey of New South Wales. Later, government geologist.
1 letter: Croydon (Australia), 12 May 1892.
1 portrait (photo).

CARPENTER, Philip Herbert (1852–1891) **II**
Palaeontologist and zoologist. Assistant master, in charge of biology teaching, Eton College.
2 letters: Windsor, n.d. (7 March); Windsor, n.d. (7 Nov.).

CARPENTER, William Benjamin (1813–1885) **II**
Naturalist. Fullerian Professor of Physiology, Royal Institution, and professor of forensic medicine, University College, London.
2 letters: London, 17 Nov. 1876; London, 1 March 1877.

CARRUTHERS, William (1830–1922) **II**
Keeper of Botany, British Museum (Natural History).
3 letters: S. Kensington, n.d.; S. Kensington, n.d.; S. Kensington, 23 Jan. 1892.

CHARLESWORTH, Edward (1813–1893) **II**
Palaeontologist. Curator, museum of Yorkshire Philosophical Society. British Museum staff, 1836.
1 letter: London, n.d., to R. Owen.
1 obituary.

CHELSEA, Viscount (Henry Arthur Cadogan) (1868–1908) **II**
Public servant.
1 autograph.

CHURCH, Sir Arthur Herbert (1834–1915) **II**
Professor of chemistry, Royal Academy of Arts.
1 portrait (photo).

COLE, William Willoughby. See ENNISKILLEN.

COOKE, Edward William (1811–1880) **II**
Marine painter.
1 letter: Sussex, 6 Dec. 1872.

COOKSON, Henry Wilkinson (1810–1876) **II**
Master of Peterhouse and Vice Chancellor, Cambridge.
1 letter: Cambridge, 20 August 1871.

COPE, Edward Drinker (1840–1897) **II**
Palaeontologist and zoologist. Professor, University of Pennsylvania.
2 letters: Philadelphia, 27 May 1885; Philadelphia, 12 Dec. 1889.
1 portrait.

CRAWFORD, Twenty-sixth Earl of (James Ludovic Lindsay) (1847–1913) **II**
Astronomer, collector, and bibliophile.
1 letter: London, 9 July 1887.

CUMING, Hugh (1791–1865) **II**
Naturalist.
2 letters: Manila, 10 Nov. 1839, to Edward Charlesworth; London, 11 Oct. 1844, to Edward Charlesworth.
1 autograph.

DALLAS, William Sweetland (1824–1890) **II**
Science writer. Assistant secretary, Geological Society of London.
2 letters: London, 5 May 1884; London, 8 July 1887.
1 portrait (photo).

DAMES, Wilhelm (1843–1898) **II**
Professor of palaeontology and director of geological museum, University of Berlin.
3 letters: Berlin, 23 March 1883; Berlin, [9?] July 1883; Berlin, 20 June 1886.
1 portrait (photo).

DANA, Edward Salisbury (1849–1935) **II**
Mineralogist. Professor of physics, Yale University.
1 letter: New Haven (Connecticut), n.d. (9 Jan.).

DANA, James Dwight (1813–1895) **II**
Geologist. Professor of natural history, Yale University.
3 letters: New Haven (Connecticut), 3 Dec. 1880; New Haven, 28 Dec. 1880; New Haven, 29 Dec. 1880.
1 portrait.

DARWIN, Charles Robert (1809–1882) **II**
Naturalist.
4 letters: Farnborough, n.d. (18 Jan.), to G. R. Waterhouse; Farnborough, 8 July [1855?], to G. R. Waterhouse; Beckenham, 7 Feb. 1882; Beckenham, n.d. (13 Feb.).
1 portrait.
1 postcard of Darwin statue.

DAUBENY, Charles Giles Bridle (1795–1867) **II**
Chemist and botanist. Professor of chemical botany and rural economy, Oxford.
1 letter: n.p., 13 Aug. 1841, to Dr. A. [Lawler?].

DAVIDSON, Thomas (1817–1885) **II**
Palaeontologist.
2 letters: Brighton, 14 Dec. 1884; Brighton, 28 June 1885.
1 portrait (pencil sketch).

DAVIES, Thomas (1837–1891) **II**
Mineralogist. Assistant, Mineralogy Department, British Museum.
1 portrait (photo).

DAVIES, William (1814–1891) **II**
Palaeontologist. Assistant, Geology Department, British Museum.
2 letters: London, 19 Dec. 1877; London, 30 Aug. 1878.
1 obituary.
1 portrait (photo).

DAVIS, James William (1846–1893) **II**
Businessman and science amateur.
2 letters: Halifax, 25 Oct. 1884; Halifax, 5 May 1891.
1 obituary.
1 portrait (photo); 1 group photo.

DAWKINS, Sir William Boyd (1838–1929) **II**
Geologist, palaeontologist, and antiquary. Professor of geology, Owen's College, Manchester.
2 letters: Manchester, 29 April 1883; Woodhunt, Fallowfield, 11 Aug. 1883.

DAWSON, George Mercer (1849–1901) **II**
Geologist. Director, Geological Survey of Canada.
2 letters: Ottawa (Ontario), 17 July 1897; Ottawa, 12 Jan. 1898.
1 biographical notice.
2 portraits.

DAWSON, Sir John William (1820–1899) **II**
Geologist. Principal of McGill University, Montreal.
3 letters: Montreal, 10 June 1887; Montreal, 3 Aug. 1887; Montreal, 19 Sept. 1889.
1 obituary.
1 portrait.

DE LA BECHE, Sir Henry Thomas (1796–1855) **I & II**
Geologist. Director General, Geological Survey of Great Britain 1835–55.
3 letters: Falmouth, 1 May 1837, to Charles Koenig (**I**); London, 7 Feb. 1852, to G. R. Waterhouse (**I**); Chesterfield, 27 July 1850, to J. W. Salter (**II**).

DELGADO, Joaquim Filippe Nery (1844–1908) **II**
Palaeontologist. Director, Geological Survey of Portugal and general inspector of mines.
2 letters: Lisbon, 27 Dec. 1884; Lisbon, 24 July 1885.
1 portrait (photo).

DESHAYES, Gerard Paul (1797–1875) **II**
Palaeontologist and malacologist. Professor, Natural History Museum, Paris.
2 letters: Paris, 6 Jan. 1836, to Edward Charlesworth; Paris, 15 Jan. 1837, to Edward Charlesworth (both in French).

DESLONGCHAMPS, Eugene Eudes (1830–1889) **II**
Professor of geology, Faculty of Sciences, Caen.
1 letter: Caen, 13 July [1885?], (French).

DILKE, Sir Charles Wentworth (1843–1911) **II**
Politician and author.
1 letter: London, 24 Feb. 1882, to u.r.

DOHRN, Anton Felix (1840–1909) **II**
Zoologist. Founder and director of Zoological Station, Naples.
1 portrait (photo).

DOLLO, Louis Antoine Marie Joseph (1857–1931) **II**
Palaeontologist. Keeper, vertebrate section, Royal Museum of Natural History, Brussels.
1 letter: Brussels, 14 May 1887 (French).

DOUGLAS, Sir Robert Kennaway (1838–1913) **II**
Keeper of Oriental Printed Books and Manuscripts, British Museum.
2 letters: London, n.d. (28 Jan.); London, n.d. (3 July).

DOVER, Bishop of (The Right Reverend William Walsh) (1836–1918) **II**
Archdeacon and canon of Canterbury.
1 letter: Canterbury, n.d.

DRYDEN, Sir Henry Edward Leigh (1818–1899) **II**
Antiquary.
1 letter: [illeg.], n.d. (19 May).

DUCIE, Third Earl of (Henry John Moreton) (1827–1921) **II & VII**
Lord Lieutenant, Gloustershire.
3 letters: London, 18 June 1891, to R. Etheridge, (**VII**); London, 17 [Dec.?] 1891, to R. Etheridge, (**II**); London, 19 April 1892 (**II**).
1 autograph (**II**).

DUNCAN, Peter Martin (1821–1891) **II**
Geologist. Professor of geology, King's College, London.
2 letters: Lee, 14 Nov. 1871; London, 1 Feb. 1880.
1 autograph.
1 obituary.
1 portrait (photo).

DYER, Sir William Turner Thiselton- (1843–1928) **II**
Botanist. Director, Royal Botanic Gardens, Kew.
3 letters: Kew, 13 March 1878; Kew, 17 Jan. 1888; Kew, 6 [Aug.?] 1891.

EDWARDS, Frederick Erasmus (1799–1875) **III**
Lawyer and amateur palaeontologist.
2 letters: London, 21 Jan. 1873; London, 8 Feb. 1873.
1 group portrait.

EGERTON, Sir Philip de Malpas Grey (1806–1881) **III**
Palaeontologist.

6 letters: Southampton, [Sept. 1846], to Charles Koenig; Oulton Park, Tarporley, 24 July 1869; Oulton Park, Tarporley, 24 Jan. 1873; Oulton Park, Tarporley, 10 Nov. 1876; London, 1 July 1877; Oulton Park, Tarporley, 8 Oct. 1880.
5 obituaries.

ELLIS, Sir Henry (1777–1869) **III**
Principal librarian, British Museum.
1 letter: London, 24 Nov. 1851, to G. R. Waterhouse.
1 autograph.

ENNISKILLEN, Third Earl of (William Willoughby Cole) (1807–1886) **III**
Amateur palaeontologist and collector.
5 letters: Enniskillen, n.d., to G. R. Waterhouse; Hatfield, 1 June 1859; London, 20 June [1877?]; Enniskillen, n.d.; London, n.d. (29 July).
1 photograph.

ERDMANN, Edvard (1840–?) **III**
Geologist. Staff, geological survey of Sweden, and amanuensus, Stockholm geological museum.
1 photograph.

ETHERIDGE, Robert Sr (1819–1903) **III**
Palaeontologist. Assistant Keeper, Department of Geology, British Museum.
2 letters: S. Kensington, 7 Dec. 1892; Chelsea, 24 Dec. 1892.
2 biographical notices, 1 with portrait.

ETHERIDGE, Robert Jr (1847–1920) **III**
Curator, Australian Museum, Sydney. Earlier, palaeontologist to Geological Survey of New South Wales.
2 letters: Sydney, 19 Feb. 1890; S. Kensington, n.d.
1 photograph.

ETTINGSHAUSEN, Constantin von (1826–1897) **III**
Palaeontologist, botanist, and geologist. Professor of botany, University of Graz.
2 letters: Graz, 30 April 1883; Graz, 27 Dec. 1883.
1 portrait (photo).

EVANS, Sir John (1823–1908) **III**
Archaeologist and numismatist.
1 letter: Hemel Hempstead, 10 Nov. 1892.
3 portraits (1 photo).
1 autograph.

FALCONER, Hugh (1808–1865) **III**
Palaeontologist and botanist. Assistant surgeon, Bengal establishment of East India Co. Superintendant, Saharanpur Botanical Gardens.
1 letter: London, n.d. (30 Aug.).
2 autographs.
2 portraits.

FAWCETT, Henry (1833–1884) **III**
Statesman. Professor of political economy, Cambridge.
1 autograph.

FEILDEN, Henry Wemyss (1838–1921) **III**
Military man and Arctic explorer.
3 letters: n.p., n.d.; Aldershot, 12 Nov. 1878; Aldershot, 24 April 1878.

FESTING, Edward Robert (1839–1912) **III**
Science Museum Director, South Kensington.
2 letters: S. Kensington, 28 June 1886; S. Kensington, n.d. (22 Nov.).

FIELDING, Edward **III**
London landscape painter.
1 letter: London, n.d.
1 autograph.
1 portrait (photo).

FISHER, Osmond (1817–1914) **III**
Clergyman and physical geologist.
1 letter: Huntingdon, 30 July 1910.
1 portrait.

FITZCLARENCE, G. A. F. See MUNSTER.

FLETCHER, Sir Lazarus (1854–1921) **III**
Keeper of Mineralogy, British Museum (Natural History). Later Director.
2 letters: S. Kensington, 14 Aug. 1884; London, 24 June 1889.
1 photograph.

FLIGHT, Walter (1841–1885) **III**
Mineralogist. Chemist to Department of Mineralogy, British Museum (Natural History).
3 letters: [S. Kensington?], n.d.; [S. Kensington?], n.d.; London, n.d.
1 photograph.

FLOWER, Sir William Henry (1831–1899) **III**
Director, British Museum (Natural History).
3 letters: London, 9 Feb. 1884; York, 16 Dec. 1886; S. Kensington, 22 Dec. 1892.
1 portrait.

FORBES, David (1828–1876) **III**
Geologist and philogist.
1 letter: London, 28 Nov. 1879 [sic].

FORBES, Edward, Jr (1815–1854) **III**
Naturalist. Regius Professor of Natural History, University of Edinburgh.
3 letters: n.p., n.d., to Edward Charlesworth; n.p., n.d., to Edward Charlesworth; n.p., n.d. (Monday, 23 Aug.), to G. R. Waterhouse.
1 poem, *The Red Tape Worm.*

FORREST, John (1847–1918) **III**
Australian explorer and politician. First Premier of Western Australia.
2 letters: [London?], 13 June 1887; Western Australia, 9 Feb. 1888.
1 portrait.

FOSTER, Sir Clement Le Neve Foster (1841–1904) **III**
Inspector of mines and professor of mining, Royal School of Mines.
1 letter: London, 2 Dec. 1891.
1 portrait.

FOSTER, Sir Michael (1836–1907) **III**
Professor of physiology, Cambridge.
1 letter: London, n.d.
1 biographical notice.
2 portraits.

FOX-STRANGWAYS, C. E. See STRANGWAYS.

FRANCIS, William (1819–1904) **III**
Journal editor and printer.
1 letter: London, 26 Aug. 1890.

FRANKS, Sir Augustus Wollaston (1826–1897) **III**
Keeper, Department of British and Medieval Antiquities and Ethnography, British Museum.
4 letters: London, 4 Nov. 1884; London, 28 Feb. 1887, to Mr. Brown; London, 3 July 1888; London, 17 Dec. 1891.

FRASER, Sir Malcolm (1834–1900) **III**
Civil engineer and government official for Western Australia.
1 letter: London, 1 Aug. 1893.
1 portrait.

FRITSCH, Anton (Frić, Antonin [Jan]) (1832–1913) **III**
Palaeontologist. Professor of comparative anatomy, University of Prague, and director of natural history department, Zoological Museum of Bohemia.
2 portraits (photos).

FRY, Francis (1803–1886) **III**
Bibliographer.
1 letter: Bristol, 17 Nov. 1875.

FURNIVALL, Frederick James (1825–1910) **III**
Scholar and editor.
1 letter: London, 13 March 1896.

GALTON, Sir Douglas Strutt (1822–1899) **III**
Captain, royal engineers; government adviser on technical and scientific matters.
1 letter: London, 12 Feb. 1895.
2 portraits.

GALTON, Sir Francis (1822–1911) **XI**
Social scientist.
1 letter: London, 24 Sept. 1904.
1 portrait.

GAUDRY, Albert Jean (1827–1908) **III**
Palaeontologist. Professor, Natural History Museum, Paris.
3 letters: Paris, 11 March 1884, (French); Paris, 11 March 1888, (French); n.p., 7 March 1890, (French).
1 portrait (photo).

GEIKIE, Sir Archibald (1835–1924) **III**
Geologist. Director General, Geological Survey of Great Britain 1881–1901.
2 letters: Girvan, 16 May 1864; London, 11 [illeg.] 1895.
1 biographical notice.
2 portraits.

GEIKIE, James (1839–1915) **III**
Geologist. Murchison Professor of Geology, University of Edinburgh.
2 letters: Edinburgh, 19 [Nov.?] 1891; Edinburgh, 16 April 1892.

GIGLIOLI, Enrico Hillyer (1845–1909) **III**
Naturalist. Professor, comparative anatomy of vertebrates, and director of the zoological museum, Florence.
2 letters: Florence, 6 Sept. 1889; Florence, 18 Oct. 1889.
1 portrait (photo).

GILBERT, Sir John (1817–1897) **III**
Illustrator and historical painter.
3 letters: Blackheath, n.d. (Sunday, 27 July); Blackheath, 19 Sept. 1896; Blackheath, [illeg.].
1 portrait (photo).
1 of his pencil sketches.

GODMAN, Frederick Du Cane (1834–1919) **III**
Naturalist. Trustee, British Museum.
2 letters: Horsham, n.d. (18 March); London, n.d. (7 Nov.).

GODWIN-AUSTEN, Robert Alfred Cloyne (1808–1884) **III**
Geologist.
1 letter: Guildford, 3 Sept. [1877], to T. Rupert Jones.
1 portrait.

GOULD, John (1804–1881) **III**
Ornithologist.
1 ink sketch of bird bill.

GRAY, George Robert (1808–1872) **III**
Zoologist. Assistant Keeper, Zoology Department, British Museum.
1 autograph.
1 portrait (photo).

GRAY, John Edward (1800–1875) **III**
Naturalist. Keeper, Zoology Department, British Museum.
2 letters: n.p., 1 July 1829, to Edward Charlesworth; London, n.d.
1 autograph.

GREEN, Alexander Henry (1832–1896) **III**
Geologist. Professor of geology, Oxford.
1 letter: Oxford, 6 Dec. 1891.
1 portrait (photo).

GRIFFITH, Sir Richard John (1784–1878) **III**
Geologist and civil engineer.
1 autograph.

GUENTHER, Albert Charles Lewis Gotthilf (1830–1914) **III**
Zoologist. Keeper, Zoology Department, British Museum (Natural History).
1 letter: London, 2 March 1893.
1 autograph.
2 portraits (photos).

GUNN, John (1801–1890) **III**
Clergyman and amateur geologist.
1 letter: [London?], 17 Aug. 1883.
1 portrait.

GURNEY, Hudson (1775–1864) **III**
Antiquary and verse writer.
2 letters: London, 23 May 1859, to u.r.; Norwich, 5 May 1864.

GURNEY, John Henry (1848–1922) **III**
Ornithologist.
2 letters: Norwich, n.d. (19 Oct.); Aldboro, 7 [Sept.?] 1891.
1 portrait.

HAAST, Sir John Francis Julius von (1824–1887) **IV**
Geologist and explorer. Director of the Canterbury Museum and professor of geology, Christchurch, New Zealand.
2 letters: n.p., 8 July 1886; S. Kensington, 10 Nov. 1886.
1 obituary.
1 portrait (photo).

HANCOCK, Albany (1806–1873) **IV**
Zoologist.
1 autograph.

HARDMAN, Edward Townley (1845–1887) **IV**
Geologist. Staff, Geological Survey of Ireland.
2 letters: Dublin, 5 March 1886; Dublin, 26 March 1886.

HARKNESS, Robert (1816–1878) **IV**
Geologist. Professor of geology, Queen's College, Cork.
1 autograph.
1 portrait (photo).

HARLEY, George (1829–1896) **IV**
Physician. Professor of medical jurisprudence at University College, London, and Physician to the Hospital.
1 letter: London, 9 Aug. 1889.

HARLEY, John **IV**
Pharmacist.
2 letters: London, 16 June 1884; London, 20 June 1884.

HARMER, Frederic William (1835–1923) **IV**
Amateur palaeontologist and geologist. Chairman and director, Norwich Electrical Co.
2 letters: Norwich, 25 April 1891; Norwich, 21 March 1893.

HAWKINS, Edward (1780–1867) **IV**
Numismatist and antiquary. Keeper of antiquities, British Museum.
2 letters: n.p., n.d., to u.r.; London, 22 March [1849?], to u.r.

HECTOR, Sir James (1834–1907) **IV**
Geologist. Director, Geological Survey of New Zealand.
2 letters: [illeg.], 14 [Aug.] 1870; Wellington (N.Z.), 16 Nov. 1870.
1 portrait (photo).

HENSLOW, John Stevens (1796–1861) **IV**
Botanist. Professor of botany, Cambridge.
2 letters: Suffolk, 15 Dec. 1844, to Edward Charlesworth; Suffolk, 27 Oct. 1853, to S. P. Woodward.

HERBERT, Auberon Edward William Molyneux (1838–1906) **IV**
Political philosopher and author.
1 letter: London, n.d. (22 July).

HICKS, Henry (1837–1899) **IV**
Geologist and medical practitioner.
2 letters: London, 27 Nov. 1892; London, 5 Dec. 1892.
1 portrait (photo).

HINDE, George Jennings (1839–1918) **IV**
Palaeontologist.
2 letters: Mitcham, n.d.; Croydon, 14 Feb. 1890.

HITCHCOCK, Charles Henry (1836–1919) **IV**
Geologist. Professor of geology and mineralogy, Dartmouth College.
1 letter: Hanover, New Hampshire; 21 May 1883.

HODSON, Samuel John (1836–1908) **IV**
Watercolour painter.
2 letters: London, 8 March 1893, to E. W.; London, 23 April 1893, to E. W.

HOLL, Harvey Buchanan (1820–1886) **IV**
Palaeontologist and geologist.
1 letter: Worcester, 27 Jan. 1885.
1 portrait (photo).

HOOKER, Sir Joseph Dalton (1817–1911) **IV**
Botanist and traveller. Director, Royal Botanic Gardens, Kew.
4 letters: Kew, 4 March 1878; Kew, 12 March 1878; Kew, 15 March 1878; Sunningdale, 17 March 1899.
1 autograph.

HORNER, Leonard (1785–1864) **IV**
Geologist and educational reformer.
2 letters: London, 11 June 1861; Folkestone, 1 Aug. 1861.

HORSLEY, John Callcott (1817–1903) **IV**
Painter.
2 letters: Kensington West, 1 Feb. 1876, to E. W.; Kensington West, 24 Nov. 1876.

HOWARD, H. See NORFOLK.

HOWELL, Henry Hyatt (1834–1915) **IV**
Director, Geological Survey of Great Britain.
1 letter: Edinburgh, 13 March [1891?].
1 portrait (photo).

HOWES, Thomas George Bond (1853–1905) **IV**
Zoologist. First professor of zoology, Royal College of Science, South Kensington.
2 letters: S. Kensington, 1 Nov. 1892; S. Kensington, 9 Dec. 1892.
1 portrait (photo).
1 group photograph [Royal College of Science class?].

HOWORTH, Sir Henry Hoyle (1842–1923) **IV**
Public servant. Amateur geologist and ethnologist.
2 letters: Manchester, 13 June 1889; Manchester, 3 May 1891.
1 biographical notice.
1 portrait (photo).

HUDLESTON (formerly Simpson), Wilfred Hudleston (1828–1909) **IV**
Geologist.
2 letters: London, 13 May 1890; London, 26 Nov. [1891].
1 portrait (photo).

HUGHES, Joshua (1807–1889) **I**
Bishop of St Asaph.
1 letter: St Asaph, 15 Feb. 1865.

HUGHES, Thomas McKenny (1831–1917) **IV**
Geologist. Woodwardian Professor of Geology, Cambridge.
3 letters: London, 29 Jan. 1873; Crieff, 16 Nov. 1888; Cambridge, 23 Feb. 1893.
1 portrait (photo).

HULKE, John Whitaker (1830–1895) **IV**
Surgeon.
2 letters: London, n.d. (5 Oct.); London, 25 March 1893.
2 obituaries with portraits.

HULL, Edward (1829–1917) **IV**
Consulting geologist. Professor of geology, Royal College of Science, Dublin.
2 letters: Dublin, 8 Dec. 1884; Dublin, 18 Nov. 1886.
1 portrait (photo).

HUTTON, William (1798–1860) **IV**
Geologist.
1 letter: [Lyme Regis?], 27 Jan. 1844, to Edward Charlesworth.

HUXLEY, Thomas Henry (1825–1895) **IV**
Zoologist, palaeontologist and ethnologist. Dean, Royal College of Science, South Kensington.
4 letters: S. Kensington, 4 [Feb.?] 1876; London, [26 Sept. 1877?]; Eastbourne, [11 July 1894?]; Eastbourne, [30 Oct. 1894?].
1 biographical notice with portraits.
1 cartoon.
3 portraits.

HYATT, Alpheus (1838–1902) **IV**
Naturalist. Professor of zoology and palaeontology, Massachusetts Institute of Technology; professor of biology, Boston University.
1 letter: Boston, 14 Feb. 1876.

JAMESON, Robert (1774–1854) **IV**
Mineralogist. Regius Professor of Natural History and keeper of the museum, University of Edinburgh.
1 letter: 29 March 1842, to u.r.

JEFFREYS, John Gwyn (1809–1885) **IV**
Conchologist.
3 letters: Hertford, 17 Nov. 1876; London, 2 Feb. 1877; London, 28 Feb. 1877.

JENKINS, Henry Michael (1840–1886) **IV**
Agriculturist. Secretary, Royal Agricultural Society.
2 letters: London, 16 Feb. 1886; London, 17 Feb. 1886.
1 portrait (photo).

JOHNSON, Goddard **IV**
Antiquary.
1 letter: Norwich, 28 Dec. 1851, to W. S. Fitch.

JONES, John Winter (1805–1881) **IV**
Principal Librarian, British Museum.
2 letters: London, 8 April 1875; [illeg.], 22 Sept. 1877.

JONES, Thomas Rupert (1819–1911) **IV**
Geologist and palaeontologist. Professor of geology, Royal Military College and at the Staff College, Sandhurst.
2 letters: Chelsea, 12 Nov. 1891; Chelsea, n.d.

1 biographical notice.
2 portraits (1 photo).

JONES, Thomas Rymer (1810–1880) **IV**
Zoologist. First professor of comparative anatomy, King's College, London.
1 letter: London, 28 Dec. 1839, to Van Voorst.

JUDD, John Wesley (1840–1916) **IV**
Professor of geology and Dean, Royal College of Science, South Kensington.
2 letters: S. Kensington, 4 April 1883; S. Kensington, 22 June 1886.
2 portraits.
1 group photograph [Royal College of Science?].

JUKES, Joseph Beete (1811–1869) **IV**
Geologist. Director, Geological Survey of Ireland.
1 letter: Dartmouth, 25 Aug. 1867.
1 autograph.
1 portrait (photo).

KELTIE, Sir John Scott (1840–1927) **IV**
Geographer.
1 letter: London, 27 March 1893.
1 portrait.

KELVIN, Lord, First Baron (William Thomson) (1824–1907) **IV**
Physicist. Professor of natural philosophy, Glasgow University.
3 portraits.

KENT, William Saville **IV**
Marine biologist. Assistant, British Museum (Natural History).
1 letter: [London?], 9 April 1892.
1 portrait.

KING, William Jr. **IV**
Director, Geological Survey of India.
1 letter: Calcutta, 20 May 1890.

KOENEN, Adolf von (1837–1915) **IV**
Geologist and palaeontologist. Professor of geology and palaeontology and director, Royal Geological Museum, University of Goettingen.
3 letters: Marburg, 15 Dec. 1877; Goettingen, 10 Aug. 1888 to E.W.; Goettingen, 13 March 1890.
1 portrait (photo).

KONINCK, Laurent-Guillaume de (1809–1887) **IV**
Chemist and palaeontologist. Professor of chemistry, University of Liège.
2 letters: Liège, 27 Sept. 1875; Liège, 15 Aug. 1883 (both in French).
1 pencil sketch of specimen.
1 portrait (photo).

LADBROOKE, John Berney (1803–79) **V**
Landscape painter.
1 letter: Mousehold Heath (Norfolk); 15 May n.d.

LANKESTER, Sir Edwin Ray (1847–1929) **V**
Zoologist. Linacre Professor of Comparative Anatomy, Oxford. Keeper of Zoology and later Director, British Museum (Natural History).
4 Letters: Suffolk, 25 Sept. [1898]; Paris, n.d. (4 May); London, n.d. (22 Aug.); London, n.d.
2 portraits

LAPWORTH, Charles (1842–1920) **V**
Geologist. Professor of geology, Birmingham University.
3 letters: Birmingham, 24 Nov. 1891; Birmingham, 24 Nov. 1891; Birmingham, 26 Nov. 1891.
2 portraits (1 photo).

LEE, Henry (1826–1888) **V**
Naturalist to Brighton Aquarium.

2 letters: Margate, 29 Oct. 1871; London, 1 Dec. 1873.
1 portrait (photo).

LEE, John Edward (1808–1887) V
Geologist and antiquary.
2 letters: Torquay, 26 July 1884; Torquay, 24 Feb. 1885.

LEIDY, Joseph (1823–1891) V
Biologist. Professor of anatomy, University of Pennsylvania.
1 letter: London, 3 July 1889.

LEWIS, Henry Carvill (1853–1888) V
Geologist. Professor of geology, Haverford College; of mineralogy, Academy of Natural Sciences, Philadelphia.
2 letters: London, n.d. (18 Nov.), to E.W.; Manchester, 25 [Feb.?] 1887.
1 portrait (photo).

LINDLEY, John (1799–1865) V
Botanist and horticulturist. First professor of botany, University of London.
1 letter: London, 25 Dec. 1837, to his mother.

LINDSAY, James Ludovic. See CRAWFORD.

LINDSTROEM, Gustaf (1829–1901) V
Director, palaeontological section of the Royal Museum, Stockholm.
3 letters: Paris, 2 July 1874; Wisby, Sweden, 6 Aug. 1874; Stockholm, 1 Dec. 1884.
1 portrait.

LINNARSSON, Jonas Gustaf Oskar (1841–1881) V
Palaeontologist and geologist to Geological Survey of Sweden.
1 letter: Karleby, Sweden; 24 Sept. 1876.

LIVERSIDGE, Archibald (1847–1927) V
Professor of chemistry and mineralogy, University of Sydney. Dean of the faculty of sciences.
2 letters: Sydney, 9 Sept. 1891, to T. Rupert Jones; Sydney, 27 Dec. 1891.

LOCKYER, Sir Joseph Norman (1836–1920) V
Astronomer. Director of Solar Physics Observatory and professor of astronomical physics, Royal College of Science, South Kensington.
1 letter: S. Kensington, n.d. (31 May).
1 autograph.
3 portraits (1 photo).

LOGAN, Sir William Edmond (1798–1875) V
Geologist. Director General, Geological Survey of Canada.
1 autograph.

LONSDALE, William (1794–1871) V
Geologist. Curator and librarian, Geological Society of London.
1 autograph.

LOVEN, Sven (1809–1895) V
Marine biologist. Professor, Academy of Sciences, and keeper of invertebrate section, Royal Museum, Stockholm.
1 letter: Stockholm, 9 Sept. 1876.

LOWRY, Joseph Wilson (1803–1879) V
Engraver of scientific subjects.
3 letters: London, 19 March 1873; London, 11 April 1878; London, 9 April 1879.
1 portrait (photo).

LUBBOCK, Sir John (1834–1913) V
Banker, man of science, and author.
3 letters: Kent, 10 Feb. 1889; London, n.d.; London, 12 May 1902.
2 portraits (1 photo).

LUTKEN, Christian Frederik (1827–1901) V
Assistant Zoologist, Zoological Museum, University of Copenhagen.
1 portrait (photo).

LYCETT, John (?–1882) V
Geologist and palaeontologist.
3 letters: London, n.d.; Scarborough, 12 Aug. 1875; Scarborough, 13 April 1878.

LYELL, Sir Charles (1797–1875) V
Geologist. First professor of geology, King's College, London.
4 letters: London, 2 May 1839, to A. Fitch; London, 9 Feb. 1856, to S. P. Woodward; London, 14 Dec. 1860, to S. P. Woodward; London, 9 March 1861, to S. P. Woodward.
1 autograph.
1 portrait (photo).

MCANDREW, Robert (1802–1873) V
Marine zoologist.
1 autograph.
1 portrait (photo).

MAJOR, Charles Immanuel Forsyth (1843–1923) V
Scientist and explorer.
2 letters: Florence, 8 April 1891; Lausanne, 13 Dec. 1891.

MALAISE, Constantin Henri Gérard Louis (1834–?) V
Palaeontologist and mineralogist. Professor, agricultural institute of Belgium.
1 autograph.
1 portrait (photo).

MANSEL-PLEYDELL, John Clavell (1817–1902) VI
Antiquary and naturalist.
2 letters: Blandford, 14 Jan. 1885; Wimborne, 7 Oct. [1888?].

MANTELL, Gideon Algernon (1790–1852) V
Geologist.
2 letters: n.p., 1852, to S. P. Woodward; London, 26 Jan. 1852, to u.r.

MARCOU, Jules (1824–1898) V
Geologist, palaeontologist, and topographer.
1 autograph.
1 portrait (photo).

MARKS, Henry Stacy (1829–1898) V
Artist.
1 letter: London, 11 Dec. 1875, to Roberts.

MARR, John Edward (1857–1933) V
Geologist. Woodwardian Professor of Geology, Cambridge.
2 letters: Cambridge, 31 Dec. 1883; Windermere, 6 Aug. 1887.

MARSH, Othniel Charles (1831–1899) V
Professor of palaeontology, Yale University.
3 letters: New Haven (Connecticut), 28 July 1880, to T. H. Huxley; New Haven, 12 March 1885; New Haven, 21 Nov. 1889.
1 portrait.
2 cartoons.

MARTINEAU, Harriet (1802–1876) V
Miscellaneous writer.
1 letter: Ambleside, n.d. (10 Jan.), to u.r.

MASKELYNE, Mervyn Herbert Nevil Story–(1823–1911) V
Mineralogist. Keeper of Mineralogy, British Museum (Natural History).
3 letters: London, n.d. (28 July) [1887?]; Swindon, n.d. (3 Sept.) [1887?]; Swindon, 10 Feb. [1893].
1 portrait.

MAUDE, Sir George Ashley (1817–1894)
Crown equerry and Master of the Horse.
2 letters: n.p., 16 Aug. 1889; [illeg.], 4 Oct. 1893.

MAW, George (1832–1912) **V**
Tile manufacturer. Amateur botanist and geologist.
2 letters: Broseley, 31 Jan. 1885; Broseley, 17 March 1885.

MEDLICOTT, Henry Benedict (1829–1905) **V**
Geologist. Director, Geological Survey of India.
2 letters: Calcutta, 27 Oct. 1876; Calcutta, 9 Feb. 1878.

MIALL, Louis Compton (1842–1921) **V**
Professor of biology, University of Leeds.
1 biographical notice with portrait.

MIERS, Sir Henry Alexander (1858–1942) **V**
Mineralogist. Professor of mineralogy, Oxford. Earlier, assistant, British Museum.
1 letter: Oxford, 20 May 1897.

MILLER, Hugh (1802–1856) **V**
Writer and geologist.
1 letter: Portobello, 24 May 1856, to [S. P.] Woodward.

MILLER, Hugh, Jr (1850–1896) **VI**
Geologist. Staff, Geological Survey of Scotland.
1 letter: Brora, 7 Sept. 1891.

MILNE, John (1850–1913) **V**
Mining engineer and seismologist.
2 letters: Croydon, n.d.; n.p., n.d. (6 Sept.).
1 portrait (photo).

MILNE-EDWARDS, Alphonse (1835–1900) **V**
Professor, later Director, Natural History Museum, Paris.
2 letters: Paris, 28 March 1879; Paris, 29 Nov. 1888 (both in French).

MILNE-EDWARDS, Henri (1800–1885) **V**
Professor, Natural History Museum, Paris, and Dean of the Faculty of Sciences.
1 obituary.
1 portrait (photo).

MITCHINSON, John (1833–1918) **V**
Canon of Gloucester Cathedral and Master of Pembroke College, Oxford.
1 letter: Atherstone, 15 March 1899.

MIVART, St George Jackson (1827–1900) **V**
Biologist.
1 letter: Chilworth, 3 Nov. 1892.
1 portrait.

MOELLER, Valerian Ivanovich (1840–?) **V**
Palaeontologist and geologist. Professor of palaeontology, Institute of Mines, St. Petersburg.
1 portrait (photo).

MOJSISOVICS Edler von MOJSVÁR, Edmund (1839–1907) **V**
Assistant director, Imperial geological institution, Vienna.
1 letter: Radstadt (Austria), 13 Aug. 1889 (German).

MOORE, Charles (1815–1881) **V**
Geologist.
1 autograph.
1 portrait (photo).
3 group photographs of geological field excursion.
1 photograph of fossil collection [Moore's, at Literary Institution of Bath?].

MORETON, Henry John. See DUCIE.

MORRIS, John (1810–1886) **V**
Geologist. Professor of geology, University College, London.
6 letters: Three with no indication of place or date; Oxford, n.d.; [London?], n.d.; Bournemouth, [1884].
1 obituary.
1 portrait (photo).

MORSE, Edward Sylvester (1838–1925) **V**
Director, Peabody Academy of Science, Salem, Massachusetts.
3 letters: Salem, Mass., 7 July 1884; London, 21 May 1888; Salem, Mass., 9 Nov. 1888.

MOSELEY, Henry Nottidge (1844–1891) **V**
Naturalist. Linacre Professor of Comparative Anatomy, Oxford.
2 letters: Oxford, 19 April 1884; Oxford, 24 Feb. 1887.

MUELLER, Hugo (?–1915) **V**
Chemist.
1 letter: Camberley, 12 April 1890.

MUNSTER, First Earl of (George Augustus Frederick Fitzclarence) (1794–1857) **V**
Public servant.
1 autograph.

MURCHISON, Sir Roderick Impey (1792–1871) **V**
Geologist. Director General, Geological Survey of Great Britain 1855–71.
4 letters: London, 5 Dec. 1866; London, 12 March 1868; n.p., 18 March 1868; [London], 6 Nov. 1868.
1 autograph.
2 portraits (1 photo).
1 group photograph [geological survey?].

MURIE, James (?–1925) **V**
Assistant librarian and secretary, Linnean Society.
1 letter: Leigh, 15 Oct. 1889.

MURRAY, Sir John (1841–1914) **V**
Marine naturalist and oceanographer.
1 letter: Edinburgh, 7 Sept. 1889.
1 portrait.

NARES, Sir George Strong (1831–1915) **VI**
Admiral and Arctic explorer.
1 letter: Surbiton, 8 March [1889?].

NEUMAYR, Melchior (1845–1890) **VI**
Palaeontologist and geologist. Professor of palaeontology, University of Vienna.
1 letter: Vienna, 8 Oct. 1883 (German).

NEVILL, Henry Ralph (1821–1900) **VI**
Clergyman. Canon of Norwich Cathedral.
3 letters: Norwich, 16 Nov. 1874; Norwich, 5 July 1879; Norwich, 9 July 1879.

NEWBERRY, John Strong (1822–1892) **VI**
Palaeontologist and geologist. Professor of geology, Columbia University School of Mines.
2 letters: New York City, 4 [June?] 1886; New York City, 13 Feb. 1888.

NICHOLSON, Henry Alleyne (1844–1899).
Biologist. Regius Professor of Natural History, University of Aberdeen.
2 letters: Aberdeen, 22 Sept. 1891; Aberdeen, 12 April 1892.
1 portrait.

NOLAN, Joseph (1841–1902) **II**
Geologist. Senior geologist, Irish Office, Geological Survey.
2 letters: Norwich, 10 Feb. 1891; Norwich, 21 Dec. 1892.

NORDENSKIOELD, Nils Adolf Erik (1832–1901) **VI**
Naturalist and Arctic explorer. Keeper of the mineralogical section, Royal Museum, Stockholm.
1 letter: [illeg.], 1875.

1 obituary.
1 portrait.

NORFOLK, Fifteenth Duke of (Henry FitzAlan-Howard) (1847–1917) **VI**
Public servant.
1 autograph.

NORTON, Caroline Elizabeth Sarah (1808–1877) **VI**
Poetess.
1 letter: n.p., n.d., to [illeg.].

OLDHAM, Thomas (1816–1878) **VI**
Geologist. Superintendent, Geological Survey of India.
2 letters: Rugby, 3 Nov. 1876; Rugby, 15 [July?] 1878.

OLIVER, Samuel Pasfield (1838–1907) **VI**
Geographer and antiquary.
1 letter: Anglesey (Gosport), 26 June 1892.

OWEN, Sir Francis Philip Cunliffe (1828–1894) **VI**
Director, Science Museum, South Kensington.
2 letters: S. Kensington, 6 Feb. 1889; S. Kensington, 9 Feb. 1889.

OWEN, Hugh **VI**
Chief cashier, Great Western Railway.
3 letters: London, 20 Nov. 1886; London, 26 March 1893, to E.W.; London, 14 April 1893, to E.W.
3 portraits (2 photos).

OWEN, Sir Richard (1804–1892) **VI & IX**
Naturalist. Superintendent, Natural History Departments, British Museum.
(All items in **IX**, except where otherwise indicated).
51 letters: London, 12 Feb. 1874 (**VI**); London, 29 Nov. 1875, to E.W.; S. Kensington, 7 Oct. 1881; East Sheen, 10 Sept. 1882; S. Kensington, 1 Oct. 1883; S. Kensington, 24 Dec. 1883 (**VI**); East Sheen, 4 Jan. 1884; London, 10 Jan. 1884, from F. Justen Dulan & Co.; East Sheen, 12 Jan. 1884; East Sheen, 22 Jan. 1884; S. Kensington, 11 March 1884 (**VI**); East Sheen, 27 March 1884; East Sheen, 28 March 1884; East Sheen, 11 April 1884; East Sheen, 13 May 1884; East Sheen, 22 May 1884; East Sheen, 29 May 1884; East Sheen, 4 July 1884; East Sheen, 9 July 1884; East Sheen, 30 July 1884; East Sheen, 8 Jan. 1885; East Sheen, 16 Jan. 1885; East Sheen, 22 Jan. 1885; East Sheen, 24 March 1885; East Sheen, 1 April 1885; East Sheen, 21 April 1885; East Sheen, 16 May 1885; East Sheen, 17 July 1885; East Sheen, 21 July 1885, to Miss. W.; East Sheen, 17 Aug. 1885; East Sheen, 11 Sept. 1885; East Sheen, 8 Oct. 1885; East Sheen, 12 Oct. 1885; East Sheen, 22 Oct. 1885 (**VI**); East Sheen, 12 Dec. 1885 (**VI**); East Sheen, 17 Dec. 1885; East Sheen, 9 May 1886; East Sheen, 26 May 1886 (**VI**); East Sheen, 13 Dec. 1886; East Sheen, 20 Jan. 1887; East Sheen, 3 Feb. 1887 (**VI**); East Sheen, 15 Feb. 1887; East Sheen, 28 Feb. 1887; East Sheen, 19 March 1887; East Sheen, 6 April 1887; East Sheen, 8 April 1887; East Sheen, 11 June 1887; East Sheen, 9 March 1888; East Sheen, 13 March 1888; East Sheen, 6 June 1888; East Sheen, n.d.
8 biographical notices.
12 obituaries (1 in **VI**).
10 reprints of lectures.
8 portraits (1 photo) (3 in **VI**).
1 view of this residence at East Sheen.
9 cartoons, etc.

PACKARD, Alpheus Spring, Jr (1839–1905) **VI**
Entomologist. Professor of zoology and geology, Brown University. Earlier, curator, Peabody Academy of Science.
2 letters: Salem, Mass., 18 Feb. 1875; Salem, Mass., 10 Jan. 1876.

PAGET, Sir James (1814–1899) **VI**
Surgeon.
1 letter: London, 31 Dec. 1892.
1 portrait.

PANIZZI, Sir Anthony (1797–1879) **VI**
Principal Librarian, British Museum.
1 autograph.

PARKER, William Kitchen (1823–1890) **VI**
Medical practitioner and comparative anatomist. Hunterian Professor of Comparative Anatomy, Royal College of Surgeons.
1 autograph.
1 obituary.

PARSONS, Alfred William (1847–1920) **VI**
Painter and illustrator.
2 letters: [London?], n.d. (31 Aug.), to Mrs [Sloan?]; Boston, Mass., n.d. (17 March), to Miss W.

PARTON, Ernest (1845–1933) **VI**
Landscape painter.
1 letter: Wargrave, 23 April 1889, to E.W.

PAVLOV, Aleksei Petrovich (1854–1929) **VI**
Geologist. Professor, University of Moscow.
2 letters: n.p., n.d., to E.W.; n.p., 19 May 1892.

PEEL, Arthur Wellesley (First Viscount Peel) (1829–1912) **VI**
Speaker of the House of Commons.
1 letter: London, 21 June 1893, to [illeg.].

PENGELLY, William (1812–1894) **VI**
Geologist.
2 letters: Torquay, 16 Oct. 1884; Torquay, 9 Feb. 1889.
1 autograph.
1 portrait (photo).
1 poem.

PERRY, John (1850–1920) **VI**
Electrical engineer and inventor. Professor of mechanics and mathematics, Royal College of Science, South Kensington. Earlier, professor of mechanical engineering and applied mathematics, Finsbury Technical College.
1 letter: S. Kensington, 9 Sept. 1889.
1 portrait (photo).
1 cartoon.

PERTHES, Jacques Boucher de Crèvecoeur de (1788–1868) **VI**
Administrator and archaeologist.
1 portrait.

PHILLIPS, John (1800–1874) **VI**
Professor of geology, Oxford.
8 letters: Oxford, 2 Nov. 1867; Oxford, 9 Sept. 1869, to Mrs Fitch; n.p., 11 May 1870; Oxford, 3 Sept. 1870; Oxford, 26 Oct. 1871, to u.r.; Oxford, 5 Nov. 1871; n.p., 7 Nov. 1871; Oxford, 29 Jan. 1873.
1 portrait.

POORE, George Vivian (1843–1904) **VI**
Physician and authority on sanitation.
2 letters: London, 7 Oct. 1888; London, 18 Oct. 1888.

POULTON, Sir Edward Bagnall (1856–1943) **VI**
Zoologist. Professor of zoology, Oxford.
1 biographical notice with portrait.

POWRIE, James **VI**
Palaeontologist.
1 letter: Forfar, 13 June 1887.
1 autograph.
1 portrait (photo).

PREECE, William Henry (1834–1913) **VI**
Electrical engineer. Engineer in chief to the Post Office.
1 portrait.

PRESTWICH, Sir Joseph (1812–1896) **VI**
Geologist. Professor of geology, Oxford.
5 letters: Shoreham, n.d. (5 [Aug?]), to Miss W.; Oxford, n.d. (8 [Nov.?]); London, 2 Jan. 1889; Shoreham, 10 [Oct.?] 1892; Shoreham, n.d. (20 March).
1 biographical notice.
3 portraits.

PREUDHOMME DE BORRE, Alfred. See BORRE.

PRINSEP, Valentine Cameron (1838–1904) **VI**
Artist.
2 autographs.

RAE, John (1813–1893) **VII**
Arctic explorer.
1 letter: S. Kensington, 19 April 1878.
2 autographs.
1 obituary.
1 portrait (photo).

RALSTON, W. R. S. See SHEDDEN.

RAMSAY, Sir Andrew Crombie (1814–1891) **VII**
Geologist. Director General, Geological Survey of Great Britain 1871–81.
2 letters: London, 28 Dec. 1869; [London], 12 Sept. 1872.
1 autograph.
2 portraits (1 photo).

RAMSAY, Edward Pearson (1842–1916) **VII**
Zoologist. Curator, Australian Museum, Sydney.
1 letter: Sydney, 2 May 1888.
1 portrait (photo).

RAYLEIGH, Third Baron (John William Strutt) (1842–1919) **VII**
Mathematician and physicist. Professor of experimental physics, Cambridge.
1 autograph.
2 portraits.

READ, Clare Sewell (1826–1905) **VII**
Agriculturist.
1 letter: London, 22 May [1871?], to Mr [W. H.?] Page.
1 portrait.

RECLUS, Elisée (1830–1905) **VII**
Geographer. Professor of geography, New University, Brussels.
1 letter: Paris, 6 Jan. 1872, (French).
2 petitions.
1 letter discussing Reclus (From F. D. [Liblane?], Camden Town, 6 Feb. 1872).

REED, William (1810–1892) **VII**
Medical practitioner and amateur geologist.
1 letter: York, 5 Oct. 1883.

REEKS, Trenham (1823 or 1824–1879) **VII**
Registrar, Royal School of Mines.
1 letter: London, 15 Dec. 1877.

REEVE, Lovell Augustus (1814–1865) **VII**
Conchologist.
1 letter: Hounslow, 30 Nov. 1864, to Mssrs Fitch and Chambers.

RICHARDSON, George Fleming (c. 1796–1848) **VII**
Geologist and miscellaneous writer. Assistant, Department of Mineralogy, British Museum, 1838–48.
1 letter: London, 28 July [1842?], to u.r.

RICHMOND, Sir William Blake (1842–1921) **VII**
Artist. Slade Professor of Fine Arts, Oxford.
1 letter: Hammersmith, 15 Nov. 1876.

ROBERTS-AUSTEN, Sir William Chandler (1843–1902) **VII**
Metallurgist. Professor of metallurgy, Royal College of Mines.
1 letter: London, [15 Nov. 1890?].
1 autograph.
2 portraits (1 photo).

ROBINSON, George Frederick Samuel (First Marquess of Ripon) (1827–1909) **VII**
Statesman. Governor-general of India.
2 letters: Ripon, [13?] Oct. 1887; Ripon, 17 Oct. 1887.

ROEMER, Ferdinand (1818–1891) **VII**
Geologist and palaeontologist. Professor of geology and palaeontology, University of Breslau.
3 letters: Breslau, 11 March 1884; Breslau, 24 Feb. 1885; Breslau, 30 June 1886.
1 autograph.
1 portrait (photo).

ROFE, John (1801–1878) **VII**
Engineer and government adviser.
2 letters: Lancaster, 24 Dec. 1872; Leamington, 7 Feb. 1878.
1 portrait (photo).

ROSCOE, Sir Henry Enfield (1833–1915) **VII**
Chemist. Professor of chemistry, Owen's College, Manchester.
2 letters: S. Kensington, 17 May 1897, to Miss H. B. Potter; Leatherhead, 19 April 1903, to Miss H. B. Potter.
1 portrait.

ROSE, Caleb Burrell (1790–1872) **VII**
Geologist.
1 letter: Swaffham, 1 Feb. 1837, to Miss Johnson.
1 autograph.
1 portrait.

ROTHSCHILD, Baron Lionel Walter (1868–1937) **VII**
Naturalist and banker. Trustee, British Museum.
2 letters: Tring, n.d.; Tring, 2 Aug. 1893.
1 portrait.

RUDLER, Frederick William (1840–1915) **VII**
Curator and librarian, Museum of Practical Geology.
2 letters: London, 23 Oct. 1888; London, 26 May 1892.
1 portrait.

RUECKER, Sir Arthur William (1848–1915) **VII**
Physicist. Professor of physics, Royal College of Science, South Kensington.
2 letters: London, 21 Feb. 1905, to Watson; London, 25 Feb. [1905], to Watson.

RUETIMEYER, Karl Ludwig (1825–1895) **VII**
Professor of zoology and comparative anatomy, University of Basle.
1 letter: Basle, 2 May 1877.
1 portrait (photo).

RUSKIN, John (1819–1900) **VII**
Author, artist and social reformer.
1 letter: London, n.d., to Miss W. W.
1 autograph.
2 biographical notices, 1 with portraits.
2 portraits (1 photo).

RUSSELL, Herbrand Arthur. See BEDFORD.

RUTLEY, Frank (1842–1904) **VII**
Geologist and petrographer. Lecturer on mineralogy, Royal College of Science, South Kensington.
1 letter: West Kensington, 28 Feb. 1893.

SABINE, Sir Edward (1788–1883) **VII**
Artillery officer and geophysicist.
1 letter: London, 20 Nov. 1871.

SALTER, John William (1820–1869) **VII**
Geologist. Palaeontologist to Geological Survey of Great Britain.
1 letter: London, n.d.
1 autograph.
2 portraits (1 photo).

SCHARFF, Robert Francis (1858–1934) **VII**
Keeper, Natural History Collections, National Museum, Dublin.
1 letter: Dublin, 9 Nov. 1890.

SCLATER, Philip Lutley (1829–1913) **VII**
Ornithologist. Secretary, Zoological Society of London.
1 letter: London, 24 June 1886.

SCOTT, Edward John Long (1840–1918) **VII**
Keeper of Manuscripts and Egerton Librarian, British Museum.
1 letter: London, 23 June 1893, to E.W.

SCROPE, George Julius Poulett (1797–1876) **VII**
Geologist and political economist.
4 letters: Cobham, 22 March 1869; Cobham, 20 Nov. 1871; Cobham, 16 Dec. 1871; Cobham, 16 Oct. 1874.
2 portraits, 1 autographed.

SCUDDER, Samuel Hubbard (1837–1911) **VII**
Entomologist. Palaeontologist to U.S. Geological Survey. Earlier, assistant librarian, Harvard University.
3 letters: Cambridge, Mass., 13 May 1876; Cambridge, Mass., 30 Oct. 1877; Cambridge, Mass., 12 Jan. 1890.
1 portrait.

SEDGWICK, Adam (1785–1873) **VII**
Geologist. Woodwardian Professor of Geology, Cambridge.
2 letters: Cambridge, 3 Jan. 1830 to [Samuel] Woodward; Cambridge, 8 June 1866.
4 portraits (2 photos).

SEELEY, Henry Govier (1839–1909) **VII**
Geologist and palaeontologist. Professor of geology and mineralogy, King's College, London.
2 letters: London, 5 Sept. 1877; London, 19 April 1891.
1 portrait (photo).

SELOUS, Frederick Courteney (1851–1917) **VII**
Hunter and explorer.
1 letter: London, n.d. (189–), to Miss W.
1 portrait.

SHARP, Samuel (1814–1882) **VII**
Geologist and antiquary.
1 letter: Wellingborough, 1 Nov. 1876.

SHARPE, Daniel (1806–1856) **VII**
Geologist.
1 autograph.
1 portrait.

SHEDDEN-RALSTON, William Ralston (1828–1889) **VII**
Russian scholar. Assistant, Printed Books Department, British Museum.
1 letter: London, n.d. (19 March), to E.W.

SILLIMAN, Benjamin (1779–1864) **VII**
Professor of chemistry and natural history, Yale University.
1 letter: New Haven (Connecticut), 27 May 1839, to Edward Charlesworth.

SMALLFIELD, Frederick (1865–1911) **XI**
Watercolour painter.
1 letter: London, 1 Aug. 1896, to Hugh Owen.

SMEE, Alfred (1818–1877) **VIII**
Surgeon.
1 letter: London, 11 Aug. 1841, to Thomas [Eatter?].

SMITH, Sir Andrew (1797–1872) **VIII**
Surgeon and naturalist. Director-general, army medical department.
1 letter: n.p., n.d. [10 Sept. 1838?], to Edward Charlesworth.

SMITH, William (1769–1839) **VII**
Geologist and civil engineer.
1 portrait.
2 printed notices about monument erected to him.
Sketch and photograph of monument.

SOLLAS, William Johnson (1849–1936) **VII**
Geologist, palaeontologist and anthropologist. Professor of geology, Oxford.
1 letter: Clifton (Bristol), 3 Dec. 1883.

SORBY, Henry Clifton (1826–1908) **VIII**
Geologist.
1 letter: Sheffield, 6 March 1891.

SOWERBY, George Brettingham, Sr (1788–1854) **VII**
Conchologist and artist.
1 autograph.

SOWERBY, George Brettingham, Jr (1812–1884) **VII**
Artist and naturalist.
1 letter: Camden Town, n.d., to u.r.

SOWERBY, James de Carle (1787–1871) **VII**
Naturalist and artist.
1 letter: Camden Town, 19 March 1839, to Edward Charlesworth.

SPARKES, John Charles Lewis (1833–1907) **VII**
Artist. Staff, Science and Art Department, South Kensington.
2 letters: S. Kensington, 29 Jan. 1883; S. Kensington, 27 Nov. 1884.
1 autograph.
1 portrait.

STANHOPE, Philip Henry, Fifth Earl of Stanhope (1805–1875) **VII**
Historian.
1 letter: London, 13 July 1868.

STEBBING, Thomas Roscoe Rede (1835–1926) **VII**
Zoologist and clergyman.
1 letter: Tunbridge Wells, 7 Feb. 1889.
1 portrait (photo).

STEPHENSON, Robert (1803–1859) **VII**
Civil engineer.
1 autograph.

STEWART, Charles (1840–1907) **VII**
Comparative anatomist. Curator, Hunterian Museum, and Hunterian Professor of Comparative Anatomy, Royal College of Surgeons.
1 letter: London, 14 Nov. 1884.

STORY-MASKELYNE. See MASKELYNE.

STRANGWAYS, Charles Edward Fox- (1844–1910) **VII**
Geologist. District Geologist, Geological Survey of England and Wales.
1 letter: Leicester, 5 Jan. 1893.

STRUTT, J. W. See RAYLEIGH.

SUESS, Edward (1831–1914) **VII**
Geologist. Professor of geology, University of Vienna.

2 letters: Vienna, 8 Feb. 1896; Vienna, 2 June 1896 (both in German).
1 portrait (photo).

TAWNEY, Edward Bernard (1841–1882) **VIII**
Geologist. Assistant curator, Woodwardian Museum, Cambridge.
1 letter: [Cambridge], n.d.

TAYLOR, Tom (1817–1880) **VIII**
Dramatist and editor of *Punch*.
1 letter: London, 24 March 1868.

TEALL, Sir Jethro Justinian Harris (1849–1924) **VIII**
Geologist. Director, Geological Survey of Great Britain 1901–11.
3 letters: Kew, 27 Jan. 1885; Kew, 17 Oct. 1886; London, 5 Oct. 1889.
1 portrait (photo).

TENNANT, James (1808–1881) **VIII**
Mineralogist. First professor of mineralogy, King's College, London.
1 letter: London, 29 Feb. 1864.

THISELTON-DYER. See DYER.

THOMPSON, Sir Edward Maunde (1840–1929) **VIII**
Palaeographer. Director, British Museum.
2 letters: London, 16 July 1888; London, 25 May 1895.

THOMSON, William. See KELVIN.

TOPLEY, William (1841–1894) **VIII**
Geologist. Staff, Geological Survey of England and Wales.
2 letters: London, 27 June 1887; London, 6 Oct. 1892.
1 portrait.

TRAQUAIR, Ramsay Heatley (1840–1912) **VIII**
Zoologist. Keeper, Natural History Collections, Royal Scottish Museum, Edinburgh.
1 biographical notice.

TRIMEN, Henry (1843–1896) **VIII**
Botanist. Director, botanical gardens at Peradeniya, Ceylon.
1 letter: London, 11 Aug. 1889.

TUPPER, Sir Charles (1821–1915) **VIII**
Canadian statesman.
1 letter: London, 5 Dec. 1895.

TURNER, Dawson (1775–1858) **VIII**
Botanist and antiquary.
3 letters: n.p., 28 Nov. [1828?], to u.r.; Yarmouth (Norfolk), 26 Feb. 1847, to u.r.; Yarmouth (Norfolk), 15 [Nov?] 1847, to u.r.

TYLER, Charles (1826–1895) **VIII**
Palaeontologist.
1 letter: London, 24 May 1883.

TYLOR, Alfred (1824–1884) **VIII**
Geologist.
1 letter: Carshalton, 29 March 1884, to Miss W.
1 portrait (photo).

TYLOR, Sir Edward Burnett (1832–1917) **VIII**
Anthropologist. Professor of Anthropology, Oxford.
2 letters: Oxford, 15 May 1897; Oxford, 21 May 1897.

VAUX, William Sandys Wright (1818–1885) **VIII**
Antiquary. Keeper, Department of Coins and Medals, British Museum.
1 letter: London, 6 Sept. 1883.

VOYSEY, Charles (1828–1912) **VIII**
Clergyman.
1 letter: Hampstead, 22 Feb. 1893.

WALCOTT, Charles Doolittle (1850–1927) **VIII**
Palaeontologist. Director, U.S. Geological Survey.
1 letter: Waldron, Indiana, 28 Oct. 1877.

WALLACE, Alfred Russel (1823–1913) **VIII**
Naturalist.
1 letter: n.p., n.d.

WALSH, William. See DOVER.

WALSINGHAM, Thomas de Grey, Sixth Baron (1843–1919) **VIII**
Entomologist. Trustee, British Museum.
3 letters: Thetford, 18 Jan. 1885; Thetford, 6 Jan. 1886; Thetford, 20 Jan. 1886.
1 portrait.

WATERFORD, Louisa, Marchioness of (1818–1891) **XI**
Artist.
1 letter: Highcliffe, n.d. (1889), to Capt. Ogle.

WATERHOUSE, George Robert (1810–1888) **VIII**
Naturalist. Keeper, Department of Mineralogy and Geology, British Museum.
4 letters: n.p., 28 May 1840, to Edward Charlesworth; London, 29 July 1859; n.p., 15 June 1875; London, 28 May 1877.

WEIR, Harrison William (1824–1906) **VIII**
Animal painter and author.
1 portrait (photo).

WESTWOOD, John Obadiah (1805–1893) **VIII**
Entomologist and palaeographer. First Hope Professor of Zoology, Oxford.
1 letter: [Hammersmith], 22 Nov. 1839, to u.r.

WETHERELL, Nathaniel Thomas (1800–1875) **VIII**
Geologist.
3 letters: Highgate, 3 May 1843, to John Purdue, Jr; Highgate, 3 Feb. 1861, to S. P. Woodward; Highgate, 23 Jan. 1874.

WHARNCLIFFE, First Earl of (Edward Montagu Stuart Granville Montagu-Stuart-Wortley-Mackenzie) (1827–1899) **VIII**
Chairman, Manchester, Sheffield & Lincoln Railroad.
3 letters: Sheffield, 30 Aug. 1890; London, 6 July 1892; London, 21 July 1892.

WHARTON, Sir William James Lloyd (1843–1905) **VIII**
Rear-admiral and hydrographer of the navy.
2 letters: Wimbledon Park, 10 Feb. 1899; Wimbledon Park, 18 Feb. 1899.

WHITAKER, William (1836–1925) **VIII**
Consulting geologist. Staff, Geological Survey.
1 letter: Rhayader, 18 Aug. 1899, to E.W.
1 portrait (photo).

WHITE, Joseph Gleeson (1851–1898) **XI**
Art editor.
1 letter: London, n.d. (4 Aug.), to Miss W.

WHITEAVES, Joseph Frederick (1835–1909) **VIII**
Palaeontologist, Geological Survey of Canada.
1 letter: Montreal, 22 Sept. 1876.

WHITMORE, Charles Algernon (1851–1908) **VIII**
Barrister and Member of Parliament.
1 letter: London, 27 Feb. 1888, to Miss W.

WHYMPER, Edward (1840–1911) **VIII**
Wood-engraver and mountain climber.
2 letters: London, 5 Feb. 1879; London, 7 Nov. 1885.

WILKINSON, Charles Smith (1843–1891) **VIII**
Geologist. Government geologist for New South Wales.
1 letter: Sydney, 26 Nov. 1884, to Richard Owen.

WILLIAMSON, William Crawford (1816–1895) **VIII**
Naturalist. First professor of natural history, anatomy, and physiology, Owen's College, Manchester.
1 letter: Fallowfield, 13 Jan. 1892.
1 portrait.

WILTSHIRE, Thomas (1826–1903) **VIII**
Professor of geology and mineralogy, King's College, London.
2 letters: Lewisham, 12 Nov. 1877; Lewisham, 9 April 1886.

WINKLER, Tiberius Cornelius (died 1898) **VIII**
Palaeontologist. Director, Teyler's Museum, Haarlem.
1 letter: Haarlem, 6 June 1889.

WOLF, Joseph (1820–1899) **VIII**
Animal painter and lithographer.
1 letter: London, 22 May 1868, to James Reeve.

WOLLASTON, Thomas Vernon (1822–1878) **VIII**
Entomologist and conchologist.
2 letters: London, n.d., to G. R. Waterhouse; Stamford, 17 July 1846, to u.r.

WOOD, Searles Valentine, Sr (1798–1880) **VIII**
Palaeontologist and geologist.
5 letters: Brentwood, 23 July 1872; Martlesham (nr Woodbridge), 15 May 1876; Martlesham, 29 Aug. 1877; Martlesham, 27 June 1879; n.p., n.d. (30 Sept.), to Edward Charlesworth.
1 group photograph of first members of Palaeontographical Society.

WOOD, Searles Valentine, Jr (1830–1884) **VIII**
Geologist.
4 letters: Martlesham (nr Woodbridge), 28 July 1877; Martlesham, 31 July 1877; Martlesham, 15 Oct. 1883; Martlesham, Dec. 1883.

WOODWARD, Sir Arthur Smith (1864–1944) **XI**
Palaeontologist. Keeper of Geology, British Museum (Natural History).
2 letters: Chelsea, 3 June 1887; Munich, 10 May 1891.

WOODWARD, Bernard Bolingbroke (1816–1869) **XI**
Librarian to the Queen at Windsor Castle.
2 letters: Yarmouth (Norfolk), 28 April 1836, to Thomas; London, 22 Dec. 1849, to T. S. Rayfield.
2 portraits (photos).
1 of his sketches.

WOODWARD, Henry Page (1858–1917) **XI**
Mining engineer and government geologist, Western Australia.
1 letter: Perth, W.A., 5 Dec. 1897, to E.W.
1 biographical notice with portrait.
2 portraits (1 photo).

WOODWARD, Henry (1832–1921) **XI**
Keeper of Geology, British Museum (Natural History).
1 letter: Edinburgh, 1 July 1864, to E.W.
1 autograph.
1 biographical notice.
3 portraits (2 photos).

WOODWARD, Henry Willoughby (1854–1932) **XI**
Archdeacon of Magila, in German East Africa.
3 letters: London, 30 March 1894, to Kate; London, 17 April 1894, to E.W.; London, 28 April 1894, to E.W.
1 portrait (photo).

WOODWARD, Horace Bolingbroke (1848–1914) **XI**
Geologist. Assistant director, Geological Survey of England and Wales.
5 letters: London, 30 Oct. 1888; London, 22 Nov. 1891; London, 10 Dec. 1891; London, 9 Feb. 1892; London, 12 Sept. 1905, to E.W.
2 portraits (photos).

WOODWARD, Martin Fountain (1865–1901) **XI**
Zoologist. Demonstrator in Biology, Royal College of Science, South Kensington.
1 letter: Plymouth, 12 Sept. 1898, to E.W.
1 obituary.
1 portrait (photo).

WOODWARD, Samuel (1790–1838) **XI**
Antiquary and geologist.
3 letters: n.p., n.d., to u.r.; n.p., n.d., to Charles Koenig; London, 4 June 1832, to his wife.
1 autograph.
1 biographical notice.
1 portrait.

WOODWARD, Samuel Pickworth (1821–1865) **XI**
Naturalist. Assistant, Department of Geology and Mineralogy, British Museum.
6 letters: Islington, Nov. 1838, to u.r.; n.p., [16 April 1840], to u.r.; n.p., 16 May [1840], to W.H. Ince; Islington, 2 Nov. 1841, to W.H. Ince; London, 8 Sept. 1857, to [illeg.] Owen; [London?] 18 March 1861, to B. B. Woodward.
1 portrait (photo).
1 of his sketches.

WRIGHT, Edward Perceval (1834–1910) **VIII**
Naturalist. Professor of botany and keeper of the herbarium, Trinity College, Dublin.
2 letters: Dublin, 11 April 1883; Dublin, 16 Nov. 1887.

WRIGHT, Thomas (1809–1884) **XI**
Physician and geologist.
2 letters: Cheltenham, 4 Feb. 1872; Cheltenham, 12 Feb. 1876.
1 portrait (photo).

YOUNG, Sir Allen William (1827–1915) **XI**
Sailor and polar explorer.
3 letters: London, 8 June [1875]; London, 13 June [1875]; London, 21 June [1875?].

ZITTEL, Karl Alfred Ritter von (1839–1904) **XI**
Palaeontologist and geologist. Professor of palaeontology, Munich University.
3 letters: Munich, 18 Dec. 1878, (German); Munich, 10 Jan. 1885; Munich, 3 Dec. 1896, (German).
1 portrait (photo).